Super II™

Supervisor and Technical Manual

Setra Systems, Inc
Weighing Systems Division
159 Swanson Road
Boxborough, MA 01719

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Introduction

Introduction

For many counting or weighing applications, the Super II default settings are adequate and the scale can be used just as it comes from the factory. However, often the scale performance can be enhanced or operation simplified if the factory settings are changed, or if some of the more specialized features are enabled. This manual is designed to instruct the programmer in the procedures used to change factory default settings for numerous scale features and, also, to describe how to use certain other features that are not enabled at the factory. Access to these settings can be password protected to assure that the settings, once programmed, are only changed by authorized personnel.

The manual is divided into four sections: Supervisor Setup, Technical Setup, Bases Setup and the appendices. Supervisor Setup, in general, allows application specific customization of the scale, such as programming the minimum sample size that will be allowed for counting certain parts, setting the baud rate for communicating with a particular printer, changing the name of field identifiers that will appear on printed labels and customizing prompts that will walk the user through a recurring counting or weighing transaction. Technical Setup allows customization of the scale that tends to be more related to scale performance, as well as several other scale specific parameters. The Bases Setup section describes how to configure the network of bases, including performance parameters. The fourth section consists of appendices that explain, at length, how to use two standard features, RS232 data communications and the ScriptCoder label making routine. It also describes the use of the optional battery and strain gauge remote scale option which can be purchased separately.

This setups manual will enable customization and/or implementation of the following scale features:

Printing
Text and bar coded labels can be printed directly from the Super II controller using the optional Dymo® SETRA 300 printer or the more advanced Eltron thermal printer (not available from Setra). ScriptCoder allows easy interfacing to a wide variety of other printers and use of its powerful scripting language can produce fairly complex labels, if needed.

Multiple Scale Systems
As described in the Bases Setup section of this manual, a single Super II scale can be converted into a system consisting of one Super II controller connected to and operating up to eight separate bases. These bases can be either Setra variable capacitance load cell bases or more conventional strain gauge load cell bases, or a combination of both. This feature provides the advantage of integrating, at one workstation, high resolution, low capacity bases for the optimal development of average piece weights, with low resolution, high capacity bases for counting and weighing very large, bulky loads.

Internal Database
A flexible internal database can be used to store part numbers and associated data for up to 750 inventory items. The ability to instantly recall an item's average piece weight from the database can eliminate repetitive sampling when that part is frequently counted. The ability to recall descriptive information from the database reduces the need to input data when transaction receipts or other labels are generated.

Transaction Log
Resident in the scale's database, this feature chronologically stores the results of each weighing or counting operation. The part number, the operator's name, the time and date of the transaction and the quantity counted can be automatically stored when the appropriate key is pressed. Transaction reports can be periodically printed to help track material flow and reconcile inventory miscounts.

Prompting Macros
The scale's display can prompt a user through a series of steps for repetitive tasks. The macros are easily written using this manual and the Super II controller. They can consist of up to 100 individual steps and can be written in some foreign languages or industry jargon, if desired. The macros help to simplify scale operation for novice or untrained operators by providing one-button operation.

Programmable Accuracy and Sample Size
This feature permits the programmer to make a trade-off between the sample size that is hand counted onto the scale and the accuracy that the scale can potentially deliver. The higher the accuracy setting selected, the larger the sample weight required. If the parts are small, a high accuracy setting can mean that the scale will prompt an operator to hand count very large samples onto the scale. Hand counting large samples can, in itself, introduce operator errors as well as slow down the scale counting process. Hand counting very small samples (fewer than 5 pieces) may produce errors, since the average piece weight may not be representative of the entire population of parts. The programmer uses these settings to minimize errors introduced by nonuniform parts, hand counting or insufficient sample weight.

Programmable Units of Measure
A preprogrammed list of weighing units is available in the User Menu. This feature allows the programmer to make several units available to the user, or only one unit if one is less likely to create confusion. Customized weighing units for special applications can be programmed and can be easily accessed by the user when needed.

Setra Dialog Language (SDL) (New in Software Ver 3.01)
Setups, database records and transaction logs can be saved and restored using the Setra dialogue language.

A brief synopsis of the programming functions as they appear in the menu selections are listed below:

Supervisor Menu:

PRINT SETUP	Program the interval print time period as well as the print formats for the 10 print registers.
SAMPLE SETUP	Program the minimum sample size, the sample size selections and to include a sample size selection menu as part of your default operation.
ACCURCY SETUP	Program the minimum scale performance accuracy based on the sample weight.
PORTS SETUP	Program the baud rate and parity characteristics of the three serial ports.
TIME DATE	Program the time and date and their reporting formats on power-up and when printing.
UNITS ENABLED	Select the availability of the various weighing units of measure as well as program the user definable unit of measure.
DATBASE SETUP	Select the Database fields for display, print the databases, and set the database record protection.

TRANSAC SETUP	Activate and choose the fields to record in the transaction log, print the transaction log or transfer to a computer, and clear the transaction log.
ID NAME SETUP	Change the names of the ID fields.
MACRO SETUP	Program up to ten macros (a series of scale operation steps) along with customizable prompts.
SETUP SECURTY	Program password protection for the Supervisor menus
BEEPER CONTROL	Allows the beeper to be disabled.

Bases Menu:

CALIB	Perform a Span calibration and access the factory linearity calibration and test menu.
UPDATE SPEED	Select the filtering and update rate.
ZERO TRACK	Set the level of Zero Tracking.
RESOLUT	Set the displayed weight resolution of the scale.
INFO	Display information about the bases such as display resolution, zero tracking, sample resolution, and software revision.
NAME	Change the name of a base.
ADDRESS	Display and change the network address of the bases.
BASERST	Force the controller to evaluate the base network.

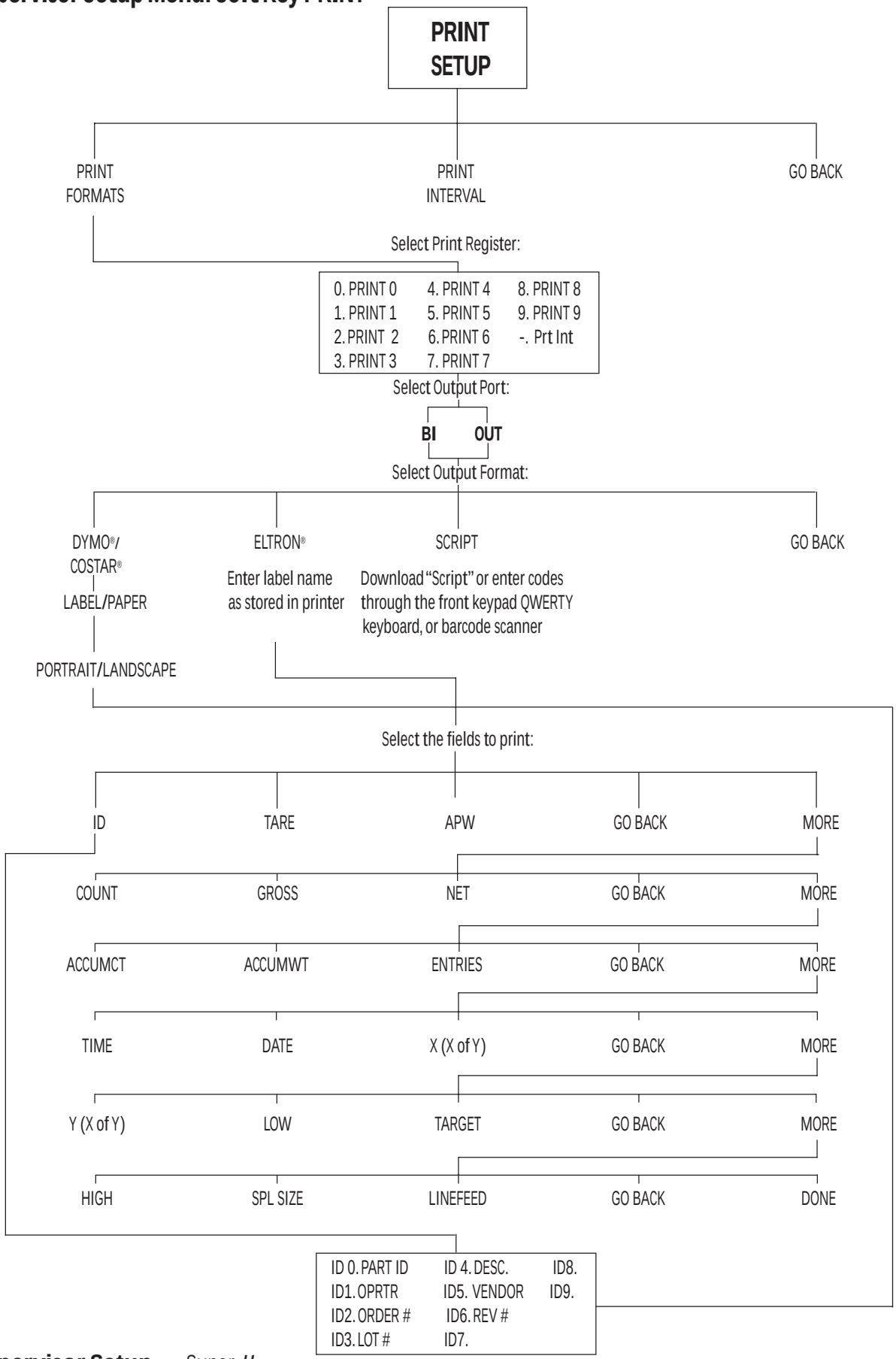
Technical Menu:

GREETNG	Change the greeting message on power-up.
BACKLIT	Set up the battery saving modes for the backlight option (if available).
SETUP TRANSFR	Send setup and database information through the ports. (Note: Available in Software Version 3.01.)
RESET	Return to the factory defaults and clear out separately the Database, Print Registers, and Macros.
AUTO SWITCH	Program automatic switching options among multiple bases.

ALARMS	Configure and enable/disable the digital output alarms.
DIG INP	Set up the controller for control by outside equipment.
SETUP SECURTY	Program password protection for the Technical and Bases Menu.
HYSTERS	Set up display hysteresis for more stable display.
APW QTY	Program the number of pieces by which the scale counts

Supervisor Setup

Supervisor Setup Menu: Soft Key PRINT



Soft Key:

PRINT SETUP

Setting Print Formats or Print Interval

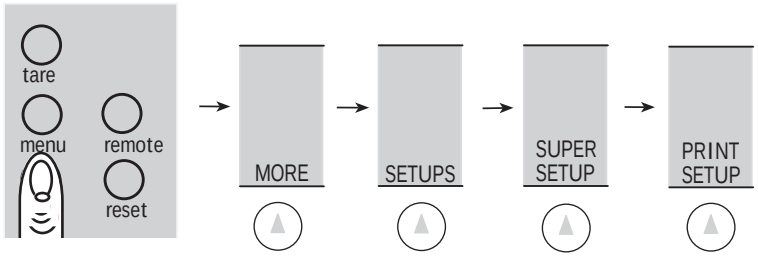
This setup allows for the design of up to ten different label formats, as well as, setting up the interval printing function. There are three types of label formats available - the Dymo® SETRA 300 printer format, the Eltron printer format, and Scriptcoder. Each of these formats is detailed below.

The Dymo® SETRA 300 has either "English only" or bar code and English information available for printing. Straight ASCII text output is available by selecting "regular" size (vs. large print) which is compatible with any serial dot matrix printer.

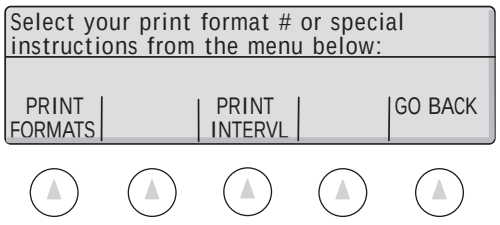
The Eltron printer selection is only designed to work in conjunction with a label format created using the Eltron *Create-A-Label* software. The label format is stored in the printer's memory. When an Eltron label is printed, scale information is sent to the printer and combined with the label format in the printer.

For any other serial printer, a label design can be created using the ScriptCoder feature (see Appendix B for details).

To access the PRINT SETUP menu, either follow the menu tree or press the soft keys in the order listed below:



The soft keys will change to the following:



Select the function to program:

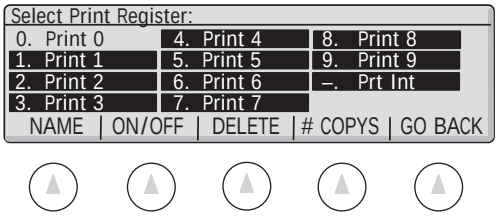
PRINT FORMATS allows the print registers to be configured.

.

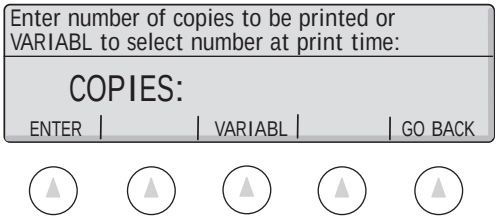
PRINT INTRVL allows programming a time interval which, when elapsed, causes the scale to print a selected format.

Programming a PRINT Format

Print Format Options: There are ten available formats that can be individually configured. Pressing the **PRINT FORMATS** soft key described previously will access the Print register selection menu.



Select the NAME soft key to change the print format name (the title that appears in the above screen). Select **ON/OFF** to enable and disable the print format. Disabled print formats cannot be printed but retain their format information. Select # COPYS to program multiple label prints. Pressing **# Copys** will display the following screen:

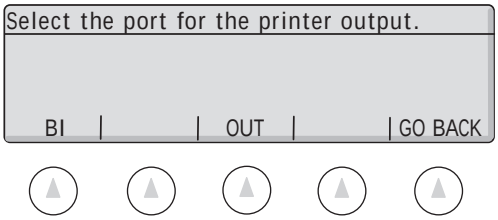


Either enter the number of copies to be printed using the numeric keypad and press the **ENTER** soft key or press the **VARIABL** soft key to allow the user to choose the number of copies when printing.

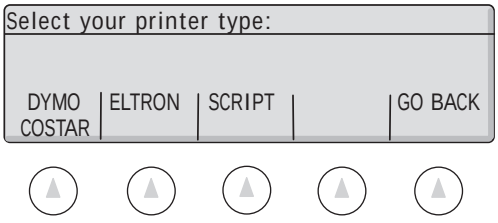
To program a print format, follow the steps below:

1. Using the numeric keypad, select the desired print register to program

2. Select the output port for the print format.



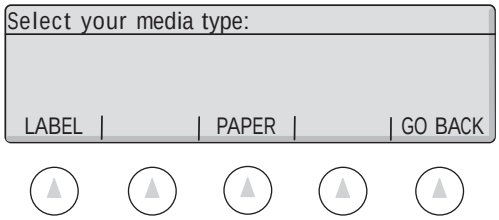
3. Select the print format type:



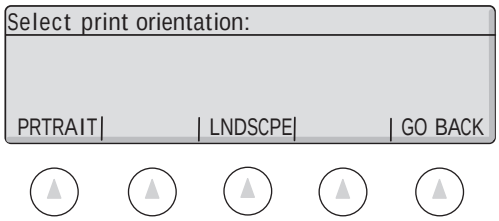
Based on the print format type selected, one of three series of screens appears:

DYMO®* Setra 300/COSTAR

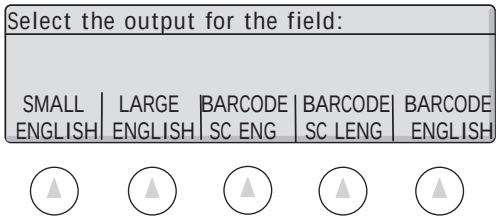
A. Select **LABEL** (ends with form feed) or **PAPER** printing (sends a line of dashes between printings).



B. Choose label orientation as either PORTRAIT which limits the bar coded ID information to 9 characters when using the Setra control codes or LANDSCAPE which limits the bar coded ID information to 20 characters when using the Setra control codes. (See RS232 Communications in Appendix A for more information on Setra control codes).



C. Select a print field to appear on the label (see "Selecting Fields to Print", p. 15). After selecting a field to print, choose the output characteristics for that field.



SMALL ENGLISH is for the regular sized English text printing (straight ASCII text).

LARGE ENGLISH is for large English text printing (contains Dymo® control codes). Large text has twice the height of the small text, but the same width.

BARCODE SC ENG is for a bar coded field with the Setra control characters (see RS232 Appendix A) and regular size English

BARCODE SC LENG is for a bar coded field with the Setra control characters (see RS232 Appendix A) and large English text.

BARCODE ENGLISH is for a bar coded field without the Setra control characters and regular size English

* Trademark of Dymo® Corporation

D. After selecting and formatting all of the desired fields, select the **DONE** soft key at the end of the field selection menu (see "Selecting Fields to Print", p. 15).

ELTRON*

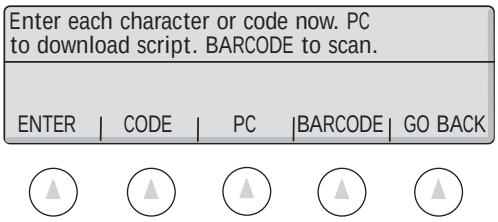
A. For the Eltron printer, type in the name of the label as stored in the printer with the *Create-A-Label* software by using the alphanumeric keypad (**abc** key) followed by the **ENTER** soft key.

B. Next select the *Create-A-Label* "when printed" fields (see "Selecting Fields to Print", p. 15 in the order they appear on the Eltron label as created with the *Create-A-Label* software.

C. After choosing the last "when printed" field, select the **DONE** soft key at the end of the field selection menu (see next section). When printing an Eltron label, the Super II software recalls the label name as stored in the printer and then sends the appropriate "when printed" field information followed by the print command (see ScriptCoder Manual for more information on Eltron Create-A-Label formats).

SCRIPTCODER

ScriptCoder is a powerful scripting language that allows the user to program the print register a single character at a time. There are four methods of data entry for a script. Please refer to Appendix B or the ScriptCoder Manual for a detailed explanation of each method of data entry and scripting language.



*Eltron® is a registered trademark of Zebra Corporation

Selecting Fields to Print

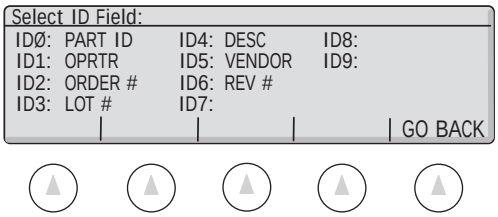
The following is a list of all scale fields available for printing. The fields can be printed in any order selected. Move up and down through the menus by using the GO BACK and MORE keys.

Select the desired fields to print from the menu below:

ID	TARE	APW	GO BACK	MORE
(will bring up all ID fields listed below)				
COUNT	GROSS	NET	GO BACK	MORE
ACCUMCT	ACCUMWT	ENTRIES	GO BACK	MORE
(for an accumulated count)	(for an accumulated weight)	(for the number of accumulated entries)		
TIME	DATE	X(X of Y)	GO BACK	MORE
Y (Xof Y)	LOW	TARGET	GO BACK	MORE
HIGH	SPLSIZE	LINEFED	GO BACK	DONE
	(for the sample size used to determine the APW)	(for spacing between fields)		(to end print format)

ID Fields

ID field selection will bring up the following menu.



Select the desired ID field to print by entering the numeric ID# associated with that field using the numeric keypad.

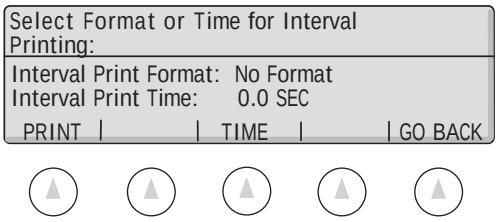
The "identifier" associated with each field will print before the variable ID information as it appears in the choices above for the Dymo® format. The identifier can be changed to any 7 characters desired.

To change the field identifier name, see the **ID NAME** soft key section starting on page 41.

NOTE: The database uses the IDØ field for storage indexing. It is recommended that the PART ID be used for the IDØ field. LOT# (ID3) and DESC (ID4) correspond to the same scale ID locations as in Setra's AutoCount 200 for backward compatibility purposes.

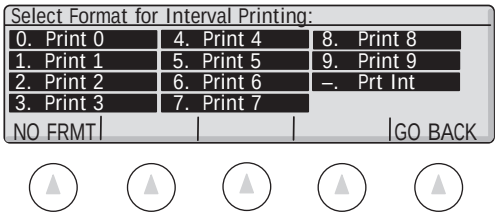
Interval Print Programming

Any of the ten print fomats can be selected for interval printing. Selecting "No Format" will send the displayed weight or count value to the BI port. The interval print function is set up by selecting the **PRINT INTERVL** soft key in the Print setup. The following display will appear:



The currently selected format as well as the Time Interval between printings is displayed. Note that the time interval of 0.0 means that the internal print function is disabled. The interval printer will wait for the last printing job to finish before starting the next. If a small interval is selected, the port will continuously stream data. Select the **PRINT** soft key to set up the print format and the **TIME** soft key to select the time between printings.

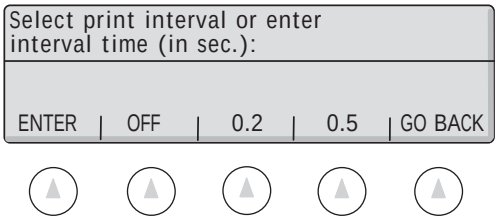
If the **PRINT** soft key is selected, the following screen appears:



Select one of the preprogrammed print registers using the numeric keypad, or the **NO FRMT** soft key to have the scale print the weight or count in the immediate Print Mode format. (Appendix A)

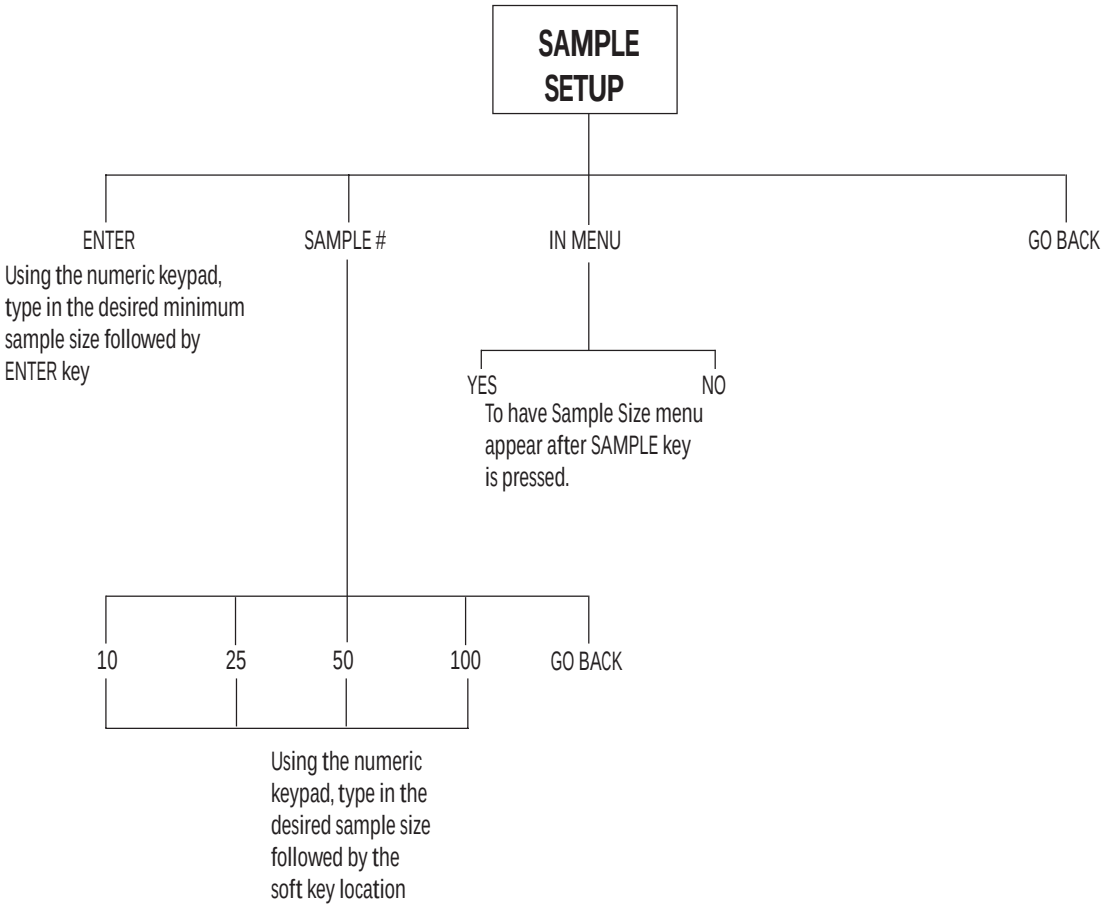
If the **TIME** soft key is selected:

Select from either the two pre-programmed choices or, using the numeric keypad, enter a time interval followed by the **ENTER** key. Once the time interval is programmed, interval printing is stopped or started by selecting the Prt Int register through the **-** (minus) key in the print menu.



NOTE: The maximum output rate is every 0.2 seconds.

Supervisor Setup Menu: Soft Key SAMPLE SETUP



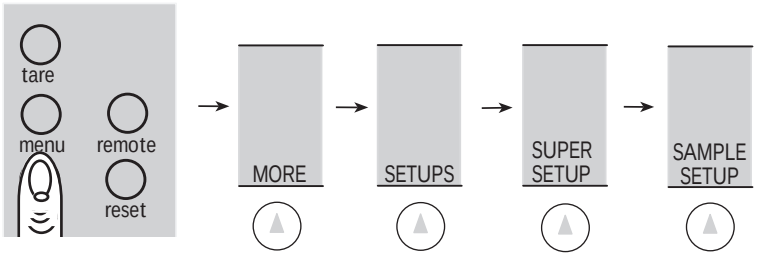
Soft Key:

SAMPLE SETUP

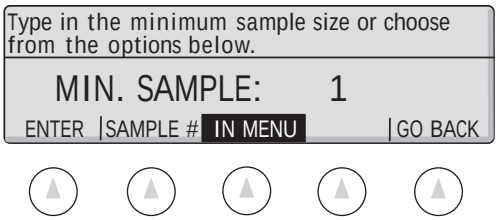
Setting a Minimum Sample Size/Sample Size Selection Menu

This setup allows a selection of a minimum number of pieces that can be used to generate an APW. Also available is the capability to have the scale create a prompt for multiple sample size selections that can be customized to whatever the operator needs.

To access the SAMPLE menu, either follow the menu tree or press the soft keys in the order listed below:



The soft keys will change to the following:

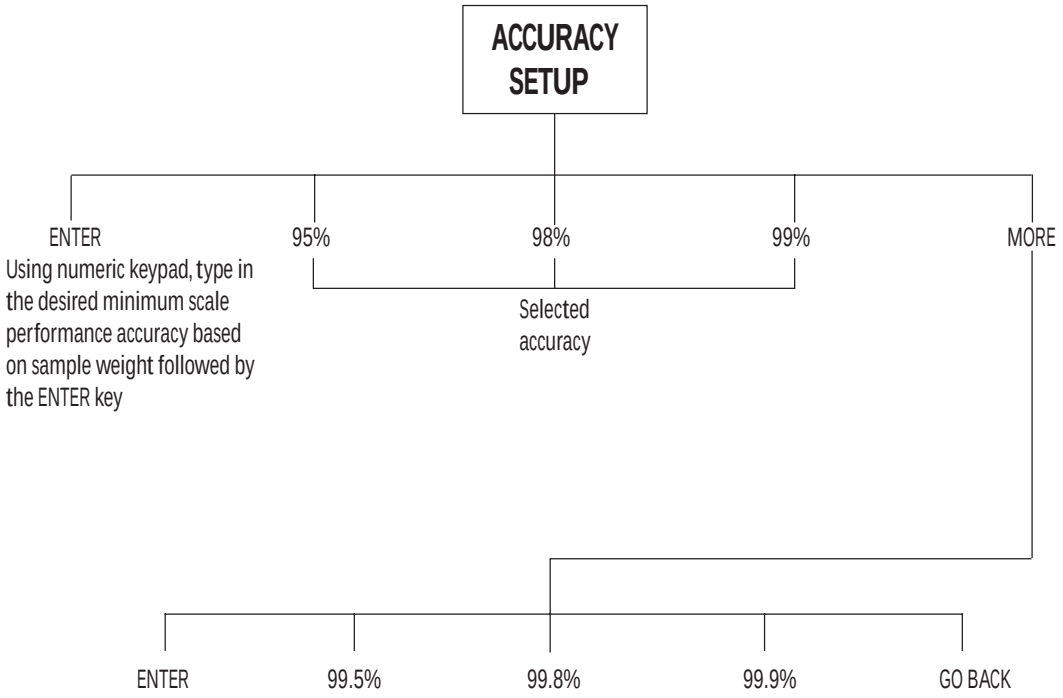


1. To set the minimum sample size, use the numeric keypad and type in the desired number followed by the **ENTER** key.

2. To change the sample size in the series of prompts when the **LRG SPL** key is pressed in the default user menu, choose **SAMPLE #**. Change each prompt to any desired value by using the numeric keypad followed by the soft key for the number to be changed.

3. To have sample size choices appear in the main menu when the **SAMPLE >** key is pressed, choose the **IN MENU** key followed by the **YES** key. The "sample size menu" choice can be turned off by pressing the **IN MENU** key followed by the **NO** key.

Supervisor Setup Menu: Soft Key ACCURCY SETUP



Soft Key:

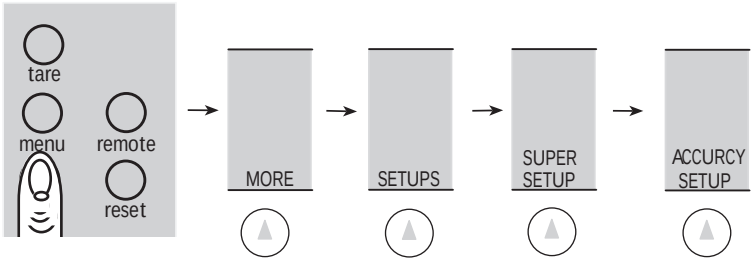
ACCURCY SETUP

Setting a Minimum Scale Performance Accuracy

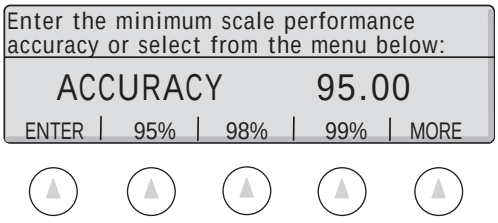
This setup allows selection of the minimum accuracy level to which the scale will perform based on the sample weight. The higher the scale performance, the larger the sample weight required. This may cause the scale to prompt for additional pieces when the **COUNT** key is pressed to meet the minimum weight requirement to perform to the programmed accuracy level.

IMPORTANT: This setup does not take individual piece weight variance into account and only has to do with sample weight. The scale must also be programmed with a large enough minimum sample size to guarantee performance based on piece weight variance.

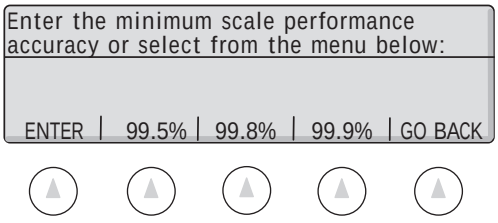
To access the ACCURACY menu, either follow the menu tree or press the soft keys in the order listed below:



Using the numeric keypad, type in the desired Minimum Scale Performance Accuracy followed by the **ENTER** key or choose from the soft key selections available and listed below.

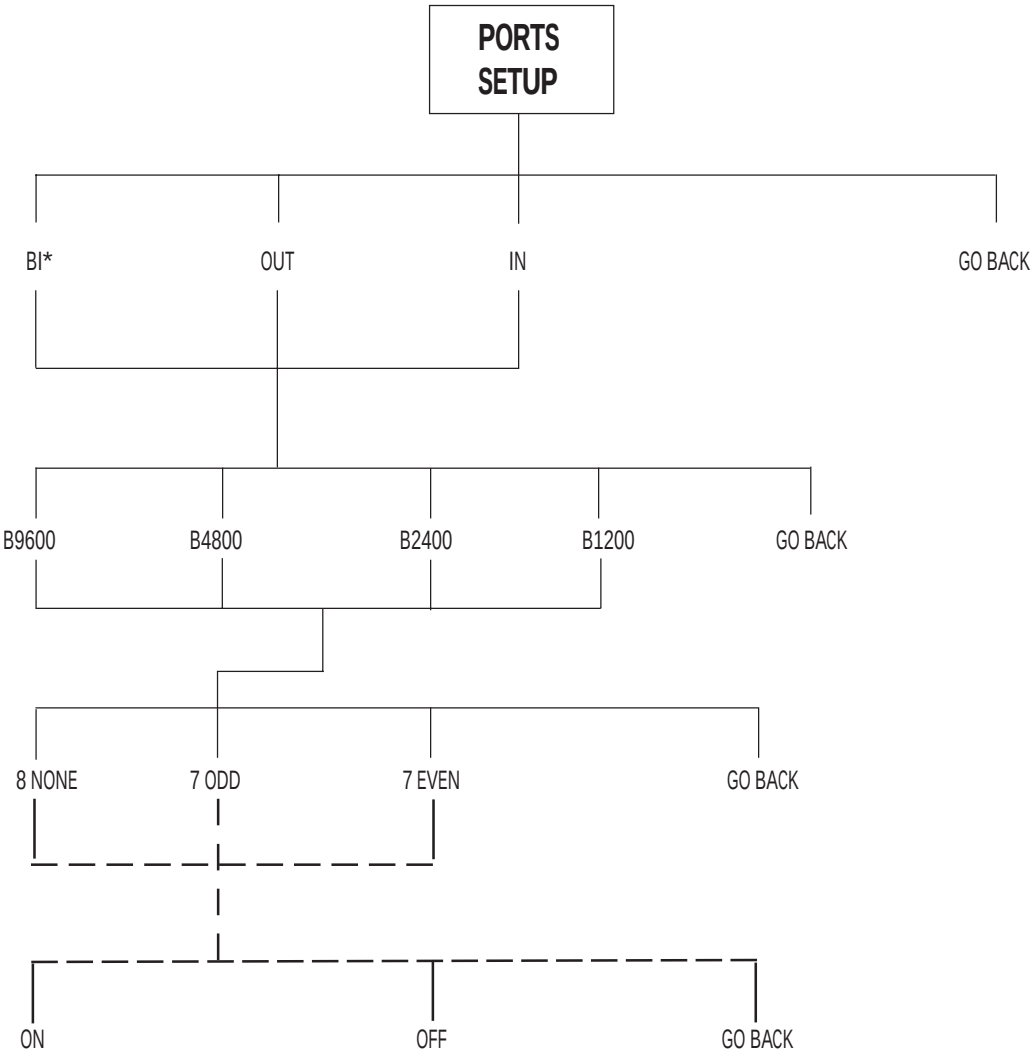


Additional selections are available by pressing the **MORE** soft key.



Either type in the desired Minimum Scale Performance Accuracy followed by the **ENTER** soft key or choose from the selections available.

Supervisor Setup Menu: Soft Key PORTS SETUP



* Hardware handshaking available on the BI port only

Soft Key:

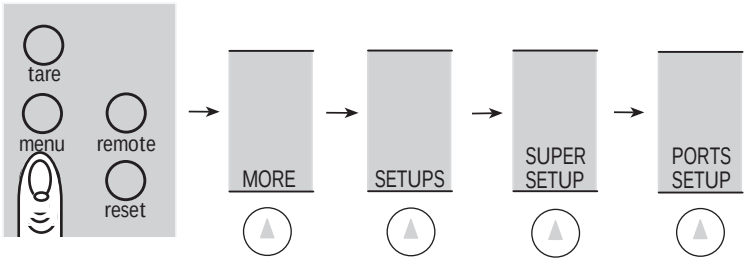
PORTS SETUP

Programming the RS232 Settings

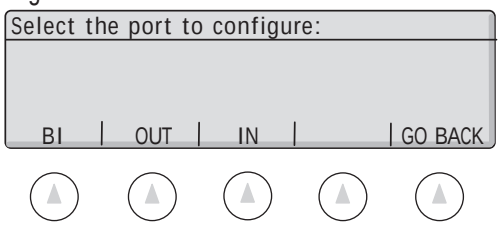
This setup allows selection of the settings for the three RS232 communication ports.

The factory default setting for the BI port is 9600 baud, 8 databits, no parity with hardware handshaking on. For the IN and OUT ports, the factory default is 2400 baud, 8 databits, and no parity.

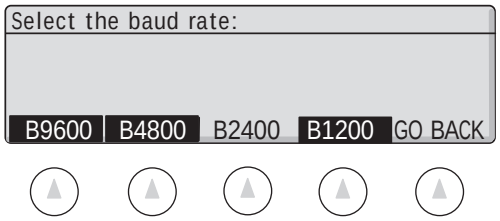
To access the RS232 menu, either follow the menu tree or press the soft keys in the order listed below:



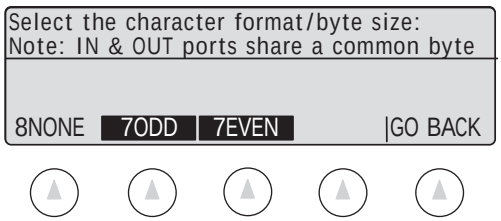
1. Choose the RS232 port to configure.



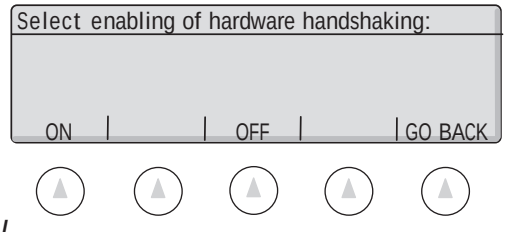
2. Choose the baud rate.



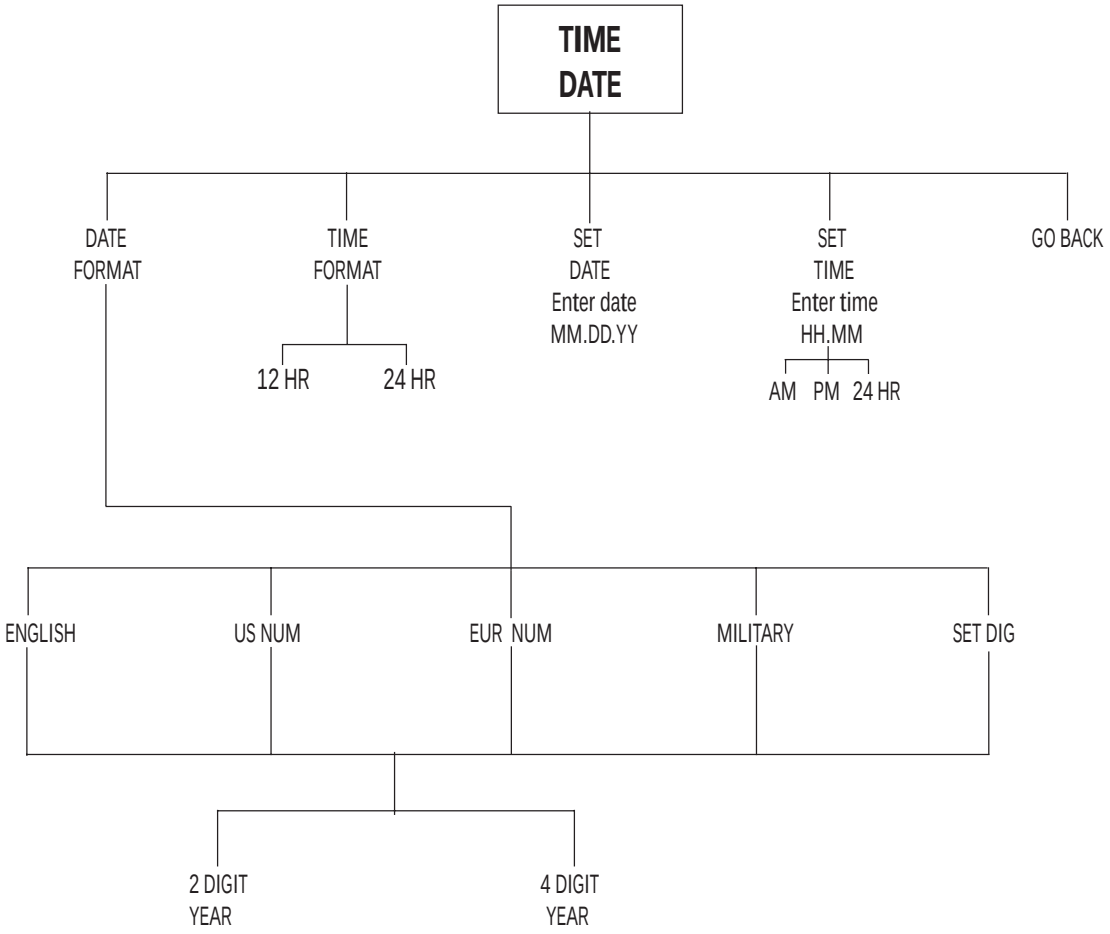
3. Choose the databit/parity setting.



4. For the BI port only, choose to have hardware handshaking ON or OFF.



Supervisor Setup Menu: Soft Key TIME DATE



Soft Key:

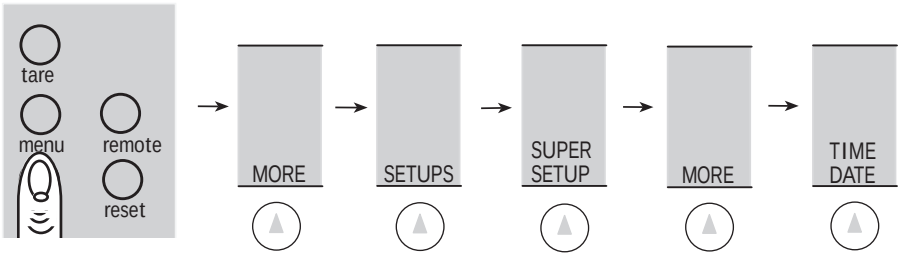
TIME DATE

Programming the Time Date Reporting

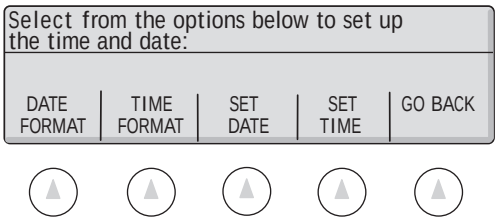
This setup allows setting of the time and date for the scale as well as choosing the format for reporting the time and date. For example, time can be reported in either 12 or 24 hour format and the year can be reported as either 4 digits (e.g., "2001") or 2 digits (e.g. , "01")

Note: The factory default reports the date in US MM/DD/YYYY and the hour in 12 hour time format.

To access the TIME DATE menu, either follow the menu tree or press the keys in the order listed below.

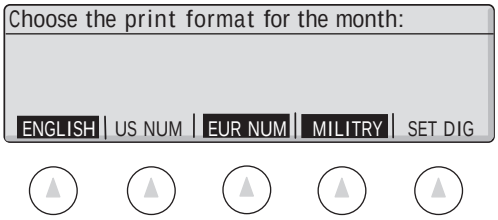


Choose from the options below:

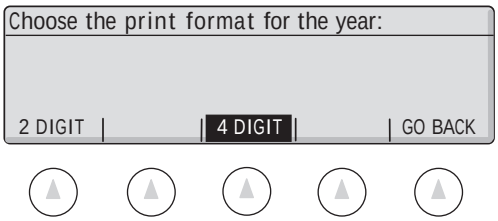


DATE FORMAT

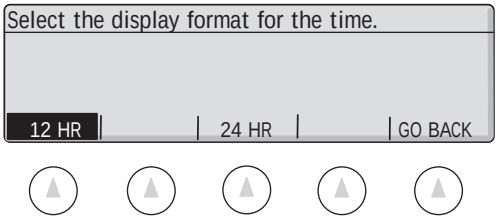
The date can be printed in four different formats. **ENGLISH** spells out the month in English. The numeric date reporting can be in U.S. format (**US NUM**) or European format (**EUR NUM**). **MILITRY** reports the date in the military format. Choose from the available options:



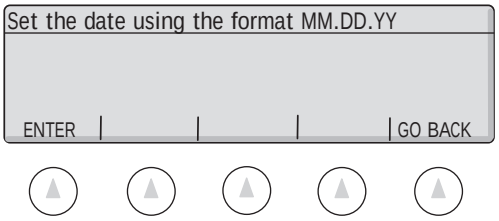
Select (**SET DIG**) to print the year in either 2 digit or 4 digit format.



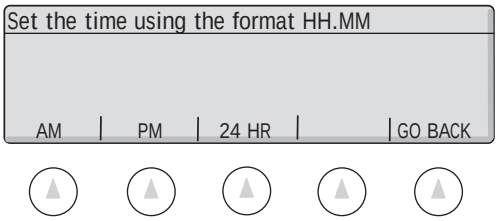
TIME FORMAT
The time can be printed in either 12 hour or 24 hour format. Choose from the options below:



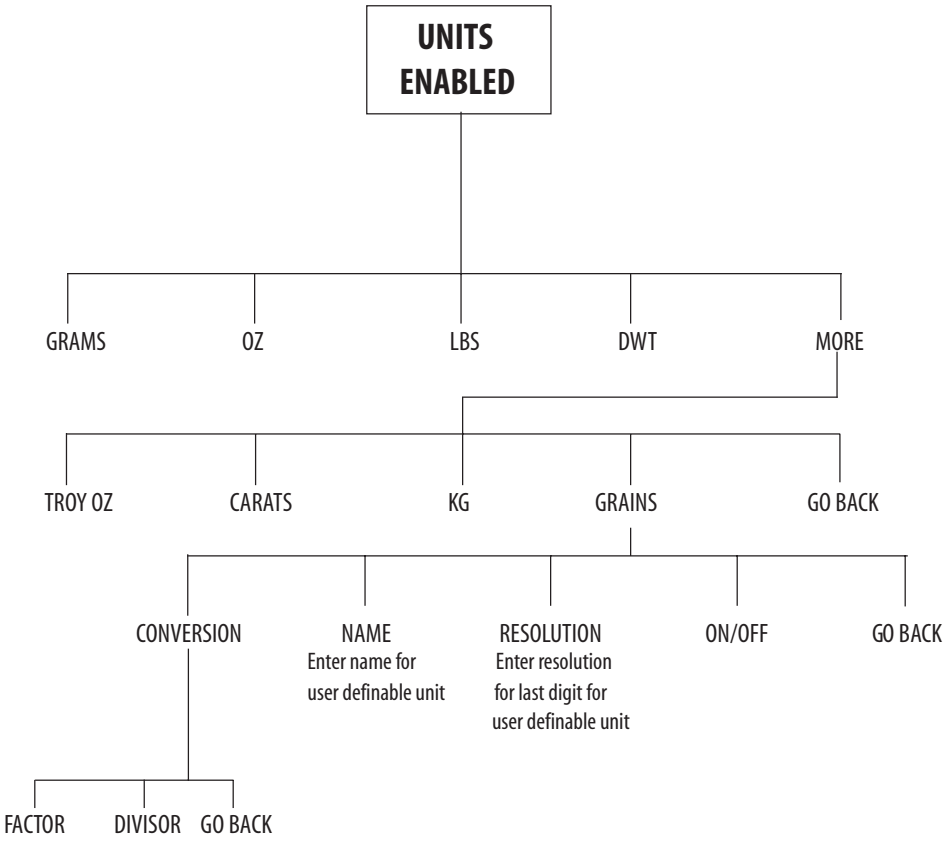
SET DATE
Using the numeric keypad, type in the date in the format, MM.DD.YY, followed by the **ENTER** key:



SET TIME
Using the numeric keypad, type in the time in the format, HH.MM, followed by a selection for **AM**, **PM**, or **24 HR** key.



Supervisor Setup Menu: Soft Key UNITS ENABLED



Soft Key:

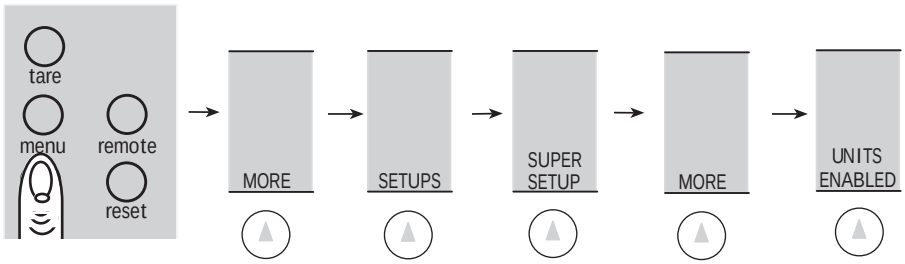
UNITS ENABLED

Selecting Weighing Units

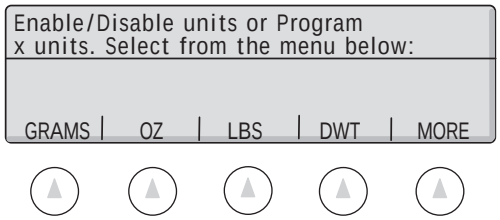
This setup allows selection of units of measure available in the **UNITS** soft key menu in the User Functions (See User's Manual). In addition, the last unit of measure (**GRAINS**) is a user definable unit of measure, sometimes referred to as 'x' units. For the user definable unit, the conversion factor, the resolution and the name of the unit can be customized.

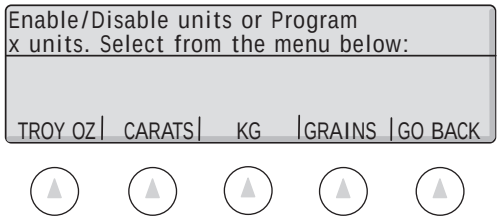
Note: The factory default is to have all units available and the user definable unit set to GRAINS.

To access the UNITS ENABLED menu, either follow the menu tree or press the keys in the order listed below:



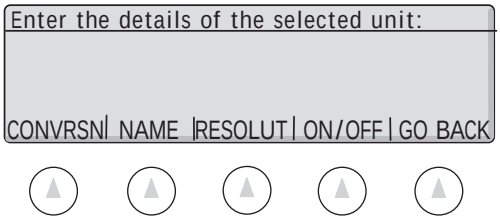
1. To toggle the availability of a unit of measure, select that unit of measure. Units that are not available to the user are shown in reverse video.



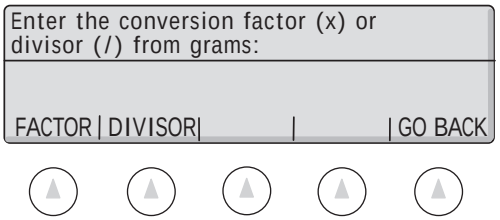


Programming the User Definable Unit of Measure

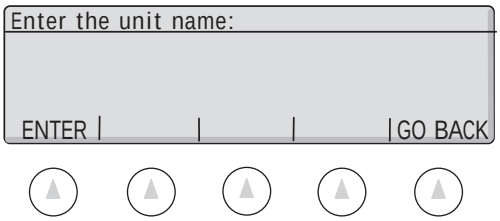
To program the user definable unit, choose the last unit (GRAINS) then select from the following menu:



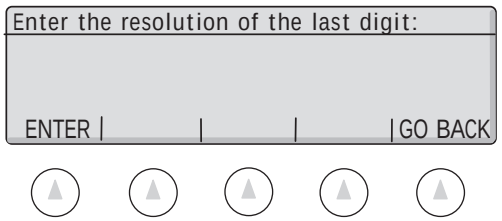
a. **CONVERSION**: Press **CONVRSN** and then**,** using the scale keypad, enter the conversion number for grams; then choose either **FACTOR** (multiplier) or **DIVISOR**.



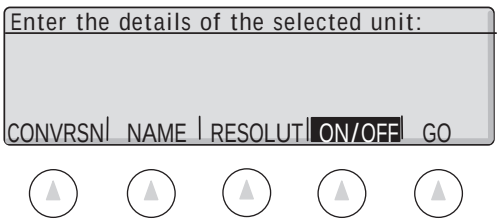
b. **NAME**: Using the alphanumeric keypad (**abc** key), enter the unit name (limited to six characters) followed by the **ENTER** key.



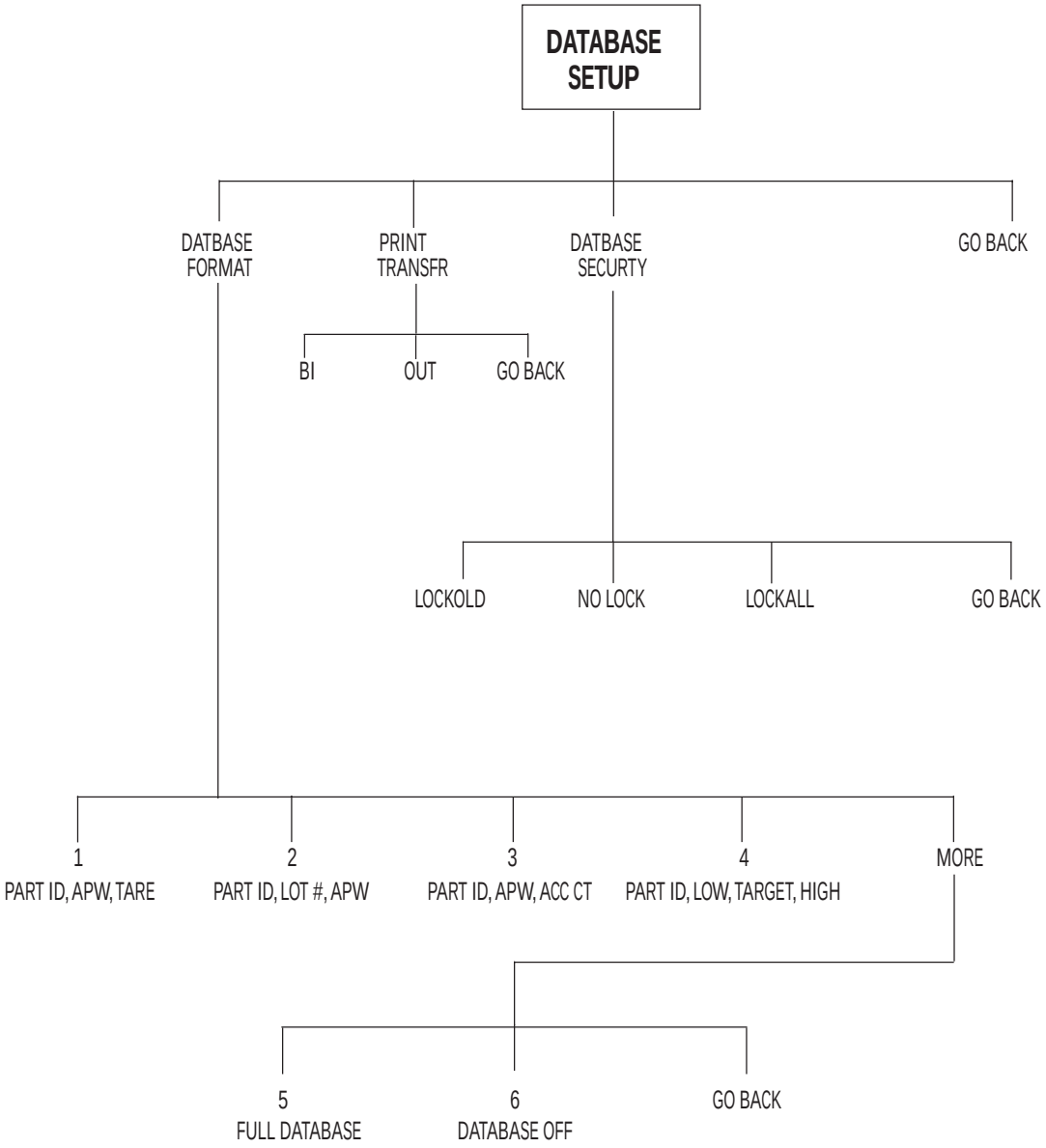
c. **RESOLUTION**: Using the scale keypad, enter the resolution of the last displayed digit followed by the **ENTER** key.



d. **ON/OFF**: This key turns off the availability of the User Definable Unit of Measure. When the ON/OFF soft key appears in reverse video, the user definable unit of measure is unavailable.



Supervisor Setup Menu: Soft Key DATBASE SETUP



Soft Key:

DATBASE SETUP

Setting up the Database Format, Printing/Transferring the Database Information, and Setting the Database Security

The controller has memory for a database which has a number of configurations. The database can contain two different types of records: database records and transactions. Database records contain stocking information and can be recalled using the PART ID (IDØ). Transactions are stored and accessed sequentially and each contains information about a single event or action performed on a single part. The database can hold up to 750 records in any combination of database records and/or transactions. See TRANSAC SETUP for details about Transaction log records and setups.

Database records and transactions are made up of fields of information. The records are comprised of the following fields:

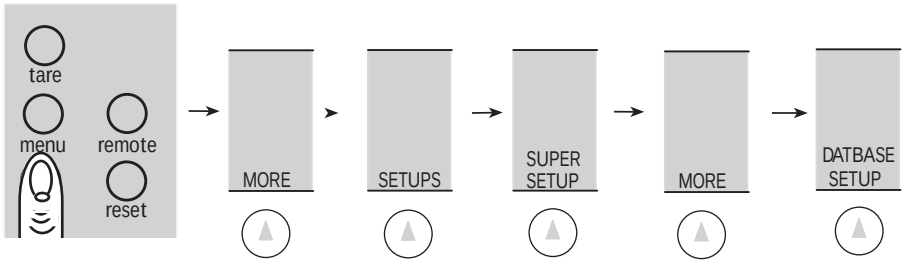
DATABASE:
PART ID (IDØ): (up to 23 characters)
DESC (ID4): (up to 16 characters)
LOT #(ID3): (up to 16 characters)
APW
Tare:
Count:
Low:
Target:
High:

The PART ID (IDØ) is used to index database records. When entering records into the database, the PART ID (IDØ) must be non-empty and unique. The database is configurable to a user's needs. The five database setups and the disabling option are:

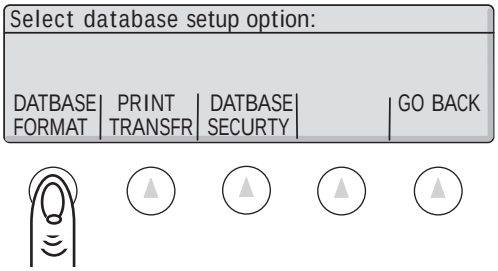
1. Part ID, APW, and Tare
2. Part ID, Lot#, and APW
3. Part ID, APW, and Count
4. Part ID, Low, Target, High (Setpoints)
5. Full Database (All fields available)
6. Database off

Note: The factory default is to have the database turned off.

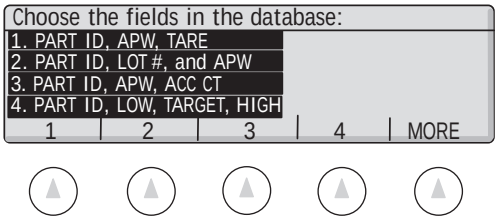
To access the DATBASE SETUP menu, either follow the menu tree or press the soft keys in the order listed below:



The following menu is displayed and the soft keys change to:

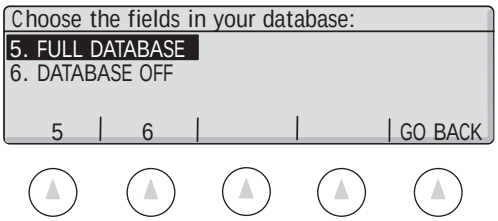


Select the **DATBASE FORMAT** soft key for programming the database format. The following menu and soft keys appear:

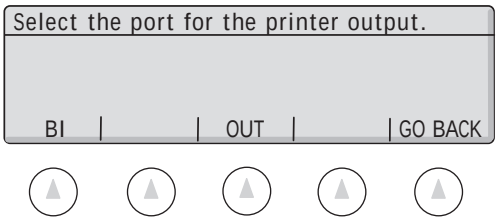


Select the desired database format by pressing the soft key for the number corresponding to the fields to be stored and automatically retrieved through the use of the PART ID field.

To have all of the database fields available or to turn off access to the database, press the **MORE** soft key followed by the number corresponding to the desired selection:

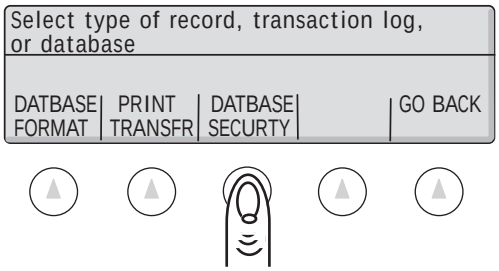


Select the **PRINT TRANSFER** soft key to send the database records through the RS-232 Port.
The following menu and soft keys appear:

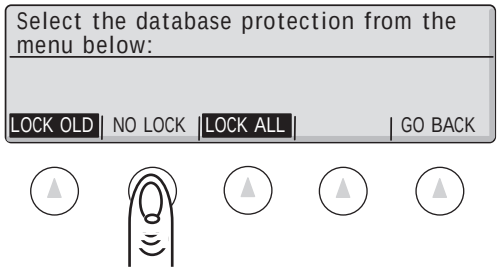


Select **BI** to transmit the database records through the Bi-directional Port, or **OUT** to send the records through the output only port.

Select **DATABASE SECURTY** to change the user access to the database records.



The following menu and soft keys will appear:

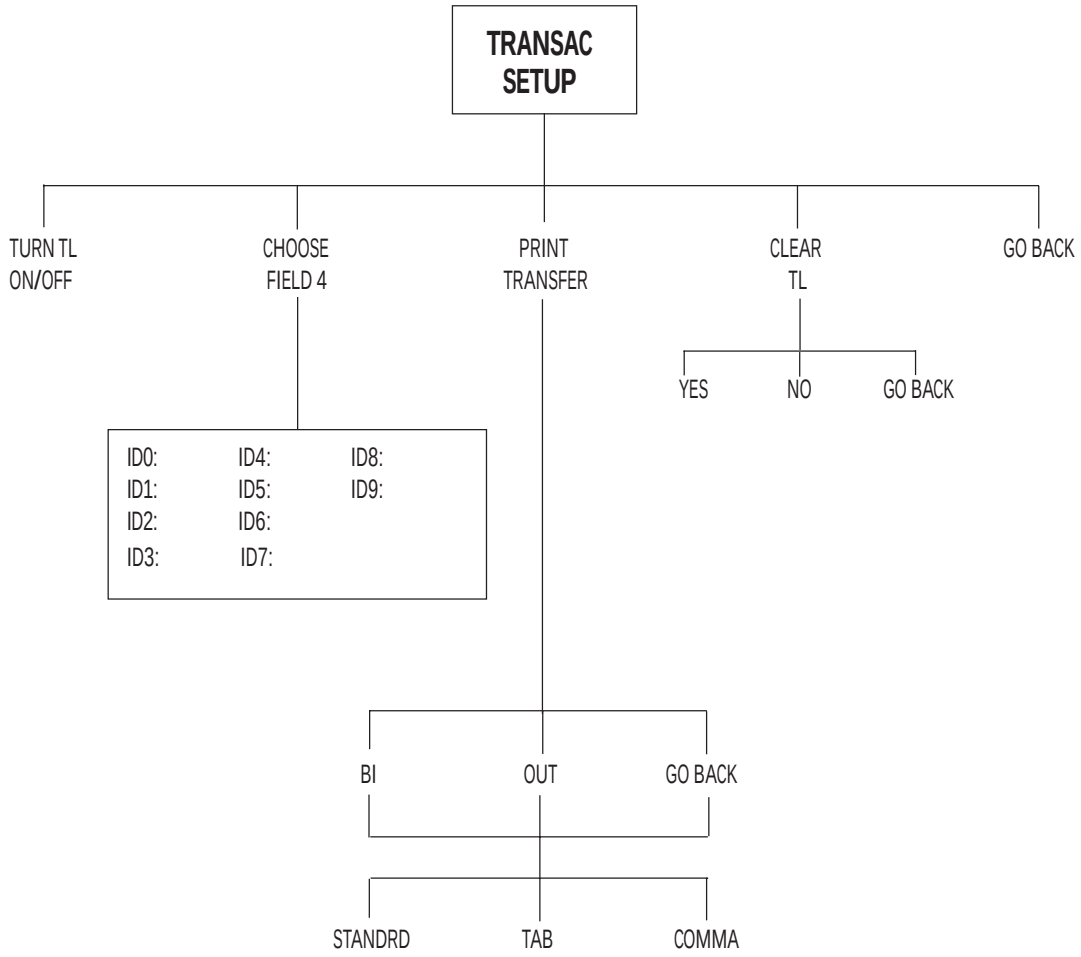


LOCK OLD: Prevents a user from making any changes or deletions to a saved record in the database. However, new records can be added to the database.

NO LOCK: Allows full access to the database for changes, deletions and additions. (Default)

LOCK ALL: Prevents any changes, deletions and additions to the database.

Supervisor Setup Menu: Soft Key TRANSAC SETUP



Soft Key:

TRANSAC SETUP

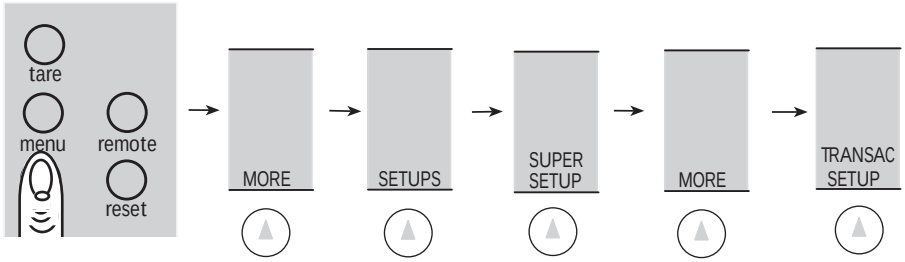
The controller has memory for an extensive database which has a number of configurations. The database can contain two different types of records: database records and transactions. Database records contain stocking information and can be recalled using the PART ID (IDØ). Transactions are stored and accessed sequentially and each contains information about a single event or action performed on a single part. The database can hold up to 750 records in any combination of database records and/or transactions. See DATBASE SETUP for details about setting and using database records.

Transactions can contain up to six fields of information:

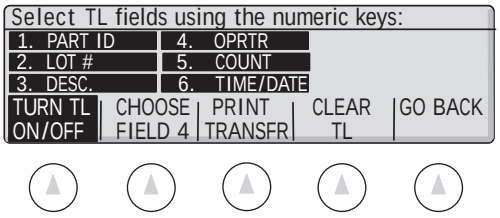
TL RECORD:
PART ID (IDØ): (up to 23 characters)
LOT # (ID3): (up to 16 characters)
DESC (ID4): (up to 16 characters)
User Selectable ID: (up to 16 characters)
Count:
Time/Date:

Any of the fields may be enabled or disabled. A disabled field will not be stored, displayed or printed.

To access the TRANSAC SETUP menu, either follow the menu tree or press the keys in the order below:

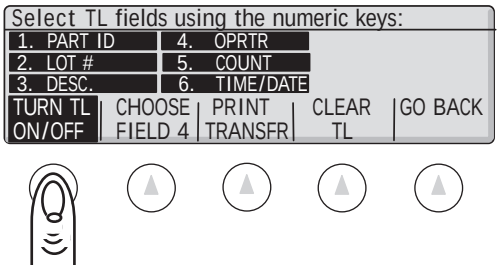


The following menu appears and the soft keys change to:

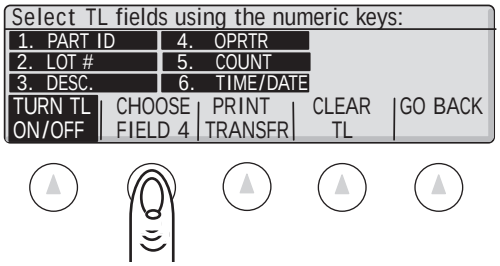


The Transaction Log will make a record of any combination of the above fields. To choose which fields will be recorded each time the **SAVE** key in the User menu is pressed, simply select the field using the numeric keypad. Selected fields will appear with the light background whereas fields not chosen will be in reverse video with a dark background.

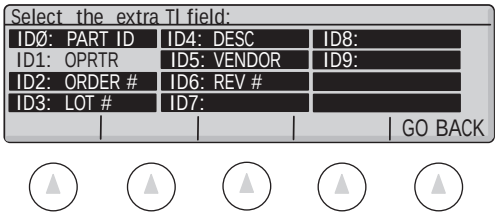
Select the **TURN TL ON/OFF** soft key to activiate the Transaction Log. When the Transaction Log is off, access to the saving, viewing, and printing screens are disabled but the format is retained.



Selection #4 is a user definable ID field. The default choice is the OPRTR (ID1) field, but can be changed to any of the available ID registers. To change Selection #4, press the **CHOOSE /FIELD 4** soft key.

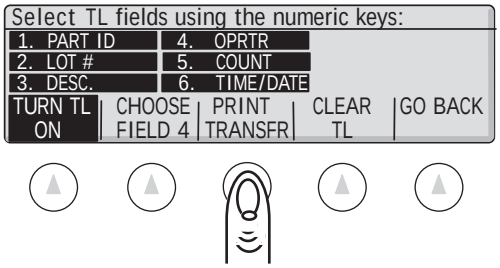


The ID selection menu will then appear:

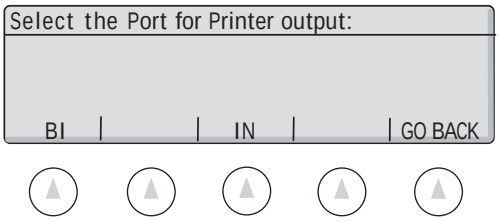


To activate the desired ID field for the Transaction Log, simply use the numeric keypad and enter the number for that ID field. The selected ID will appear with the light background whereas the other IDs will appear in reverse video with a dark background.

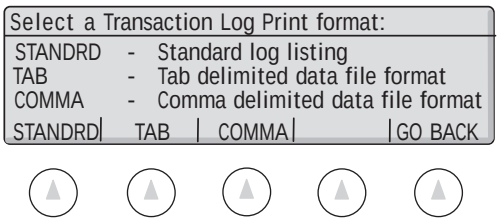
Press **PRINT TRANSFR** to send the Transactions stored in the Transaction Log to an RS232 port.



The following menu appears:



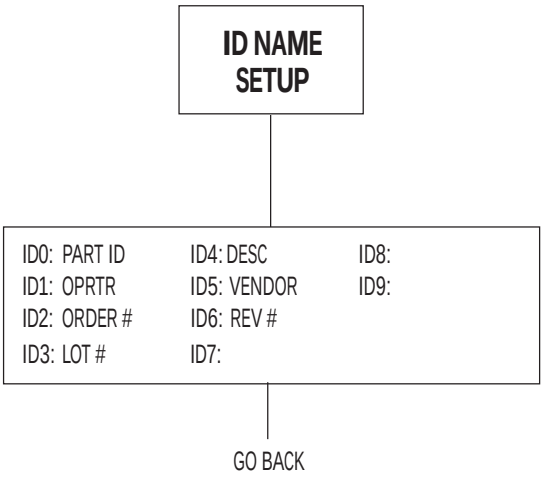
Select a port. The following menu appears:



Choose a print format and the data will be printed. Note that standard log listing will print a label for each record and field which is convenient for printed reports but of marginal use for computer data capture. Tab and comma formats are used for exporting the data to a computer.

Press **CLEAR TL** to erase all the transactions stored in the Transaction Log.

Supervisor Setup Menu: Soft Key ID NAME SETUP



Soft Key:

ID NAME SETUP

Changing the Name of the ID Fields

This setup allows changes to be made to the name of the ID fields. There are ten ID fields available for storage of information, for printing or for database usage. ID fields IDØ through ID6 have already been named with some of the most popular uses for scale transactions. All of the fields are available for renaming to any seven character descriptions.

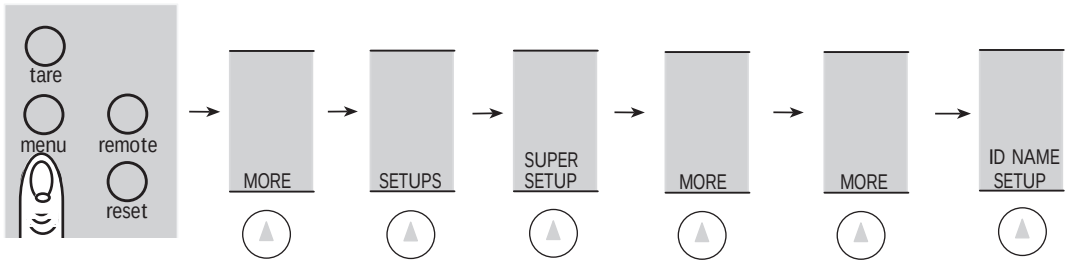
Beware of making changes that would cause incompatibility with multi-scale systems or with older Setra scale systems. The IDØ field is the PART ID field and is used to reference all of the information in the database records. It is strongly recommended that the IDØ field always remains the PART ID or PART # field. The ID3: LOT# field and ID4: DESC (description) field are fields that have been named in those particular places for backward compatibility to Setra's Auto Count™200 system.

All other fields can be used for any other purpose. Each of the ID fields is either volatile or non-volatile. The non-volatile ID fields remain in the scale's memory until DELETED or changed. The volatile ID fields are only temporary registers that get cleared every time the **reset** key is pressed. The recommendation is to use the non-volatile ID registers for repetitive fields such as OPERATOR NAME or VENDOR NAME that do not require re-entry for every transaction.

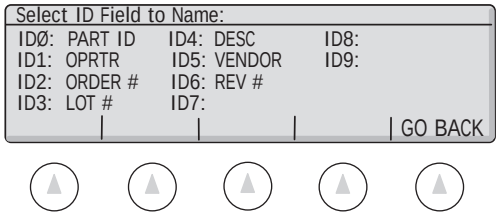
The volatile and non-volatile fields are divided as follows:

VOLATILE	NON-VOLATILE
IDØ: PART ID	ID1: OPRTR
ID2: ORDER #	D5: VENDOR
ID3: LOT #	ID7:
ID4: DESC	ID8:
ID6: REV#	ID9:

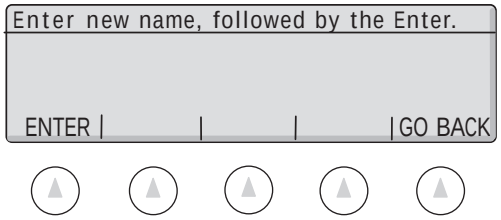
To access the ID NAME SETUP menu, either follow the menu tree or press the keys in the order listed below.



The following menu will appear:

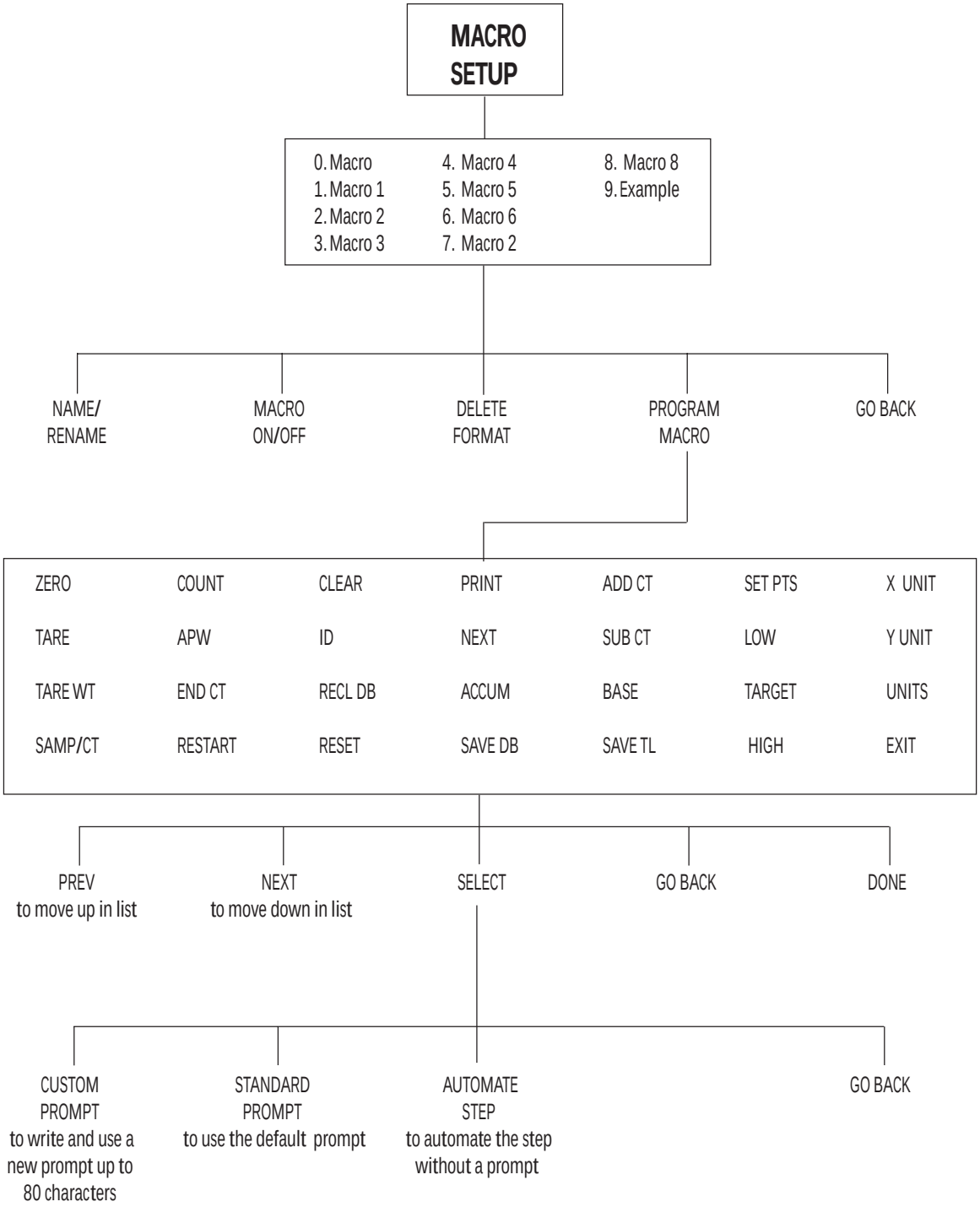


Using the numeric keypad, enter the number of the desired ID field name to be changed.



Using the alphanumeric keypad (**abc** key) or PC keyboard, enter up to 7 characters of the new name for the ID field followed by the **ENTER** soft key.

Supervisor Setup Menu: Soft Key MACRO SETUP



Soft Key:

MACRO SETUP

Customizing Scale Operation & Prompting Sequences

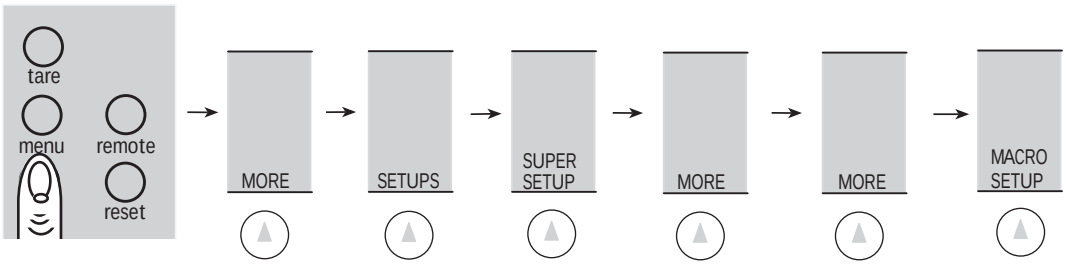
This setup allows creation of a custom scale operation sequence. A macro step can either use the standard prompt or a custom prompt. The prompts are limited to 80 characters on two lines. The scale function names cannot be changed.

Each macro is comprised of a series of steps. A step has an operation that the scale performs (selectable from a list during macro programming) and a prompt to the user.

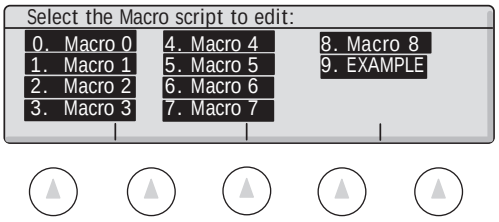
There are two modes of operation of the macro:

1. If only Macro Ø is enabled, it will be the scale's DEFAULT as the first and only operation available on power-up, using the soft keys (except for going into the menu system).
2. If macros other than Macro Ø, are enabled, they will be available when the **MACRO SETUP** soft key is pressed while in the scale's normal default operating mode. If more than one macro is enabled, a menu selection will appear.

To access the MACRO SETUP menu either follow the menu tree or press the keys in the order listed below:

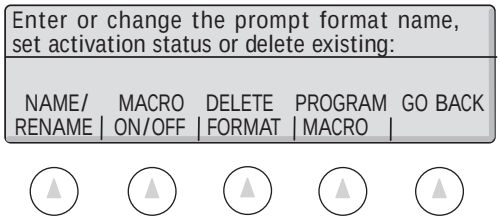


The following menu appears:



Using the numeric keypad, select the Macro (Ø-9) to edit. If the macro is to be the scale's DEFAULT, place it in Macro Ø. Please note that if Macro Ø is the only macro active, it will automatically become the scale's default operation. If only one macro is programmed and it is not to become the scale's default operation, place it in Macro 1 - 9.

Once the macro position has been selected, the soft keys change to the following:



NAME/RENAME To customize the name of a Macro (up to 7 characters) and help identify its function when it appears in the Macro Selection Menu. Some possible examples are RECEIVE for a receiving function or KIT#123 for a special bagging operation.

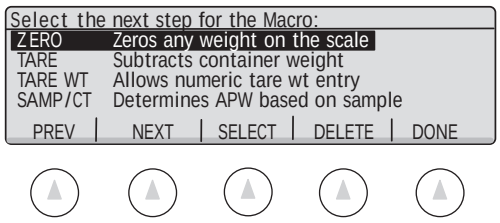
MACRO ON/OFF To turn on or to turn off access to the Macro.

DELETE FORMAT To delete the programmed steps in the Macro.

PROGRAM MACRO To select the steps for the Macro.

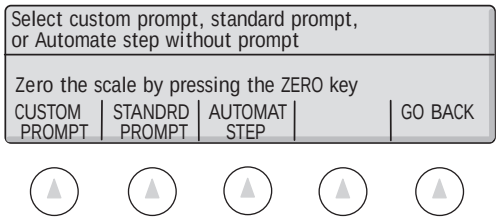
Programming a Macro

1. After selecting the **PROGRAM MACRO** soft key in the previous menu, the top of the long list of possible scale functions appears with the following soft keys:



2. To scroll through the list of scale functions, use the **PREV**(previous) and **NEXT** soft keys. The list of scale functions is on the following pages.

3. To select the highlighted scale function as the next step in the macro, press the **SELECT** soft key. The default prompt associated with that key name and function will appear and the soft keys change to the following:



A. To use the default prompt, press the **STANDRD PROMPT** soft key and the program will return to the scale function selection menu (step 1).

B. To program a custom prompt associated with that key name and function, press the **CUSTOM PROMPT** soft key. The menu will change; type in a prompt of up to 80 characters using the scale's alphanumeric keypad (**abc** key) or an attached QWERTY keyboard.

C. To automate the step without a prompt, press the **AUTOMAT STEP** soft key. An automated step will process the scale function without waiting for user input.

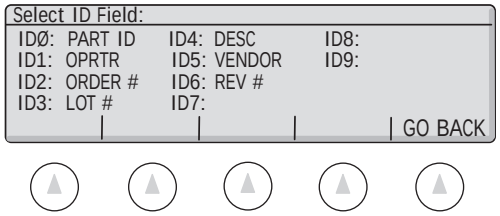
4. To erase the last selected step in the macro, press the **DELETE** soft key. If all the steps are erased, the previous screen is displayed.

5. After selecting the last step in the macro, press the **DONE** soft key.

MACRO STEPS:

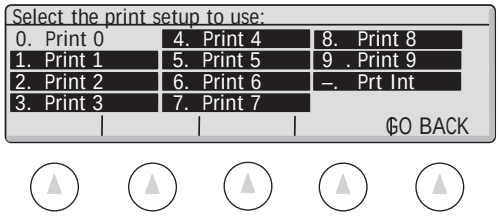
NAME	FUNCTION	PROMPT
ZERO	Zeros any weight on the scale	Zero the scale by pressing the **ZERO** key.
TARE	Subtracts container weight	Place an empty container and press the **TARE** key.
TARE WT	Allows numeric tare weight entry	Enter the tare weight and press the **TARE WT** key.
SMPL/CT	Determines APW based on sample	Add sample and press the **SMPL/CT** key.
COUNT	Switches to the count mode	Press the **COUNT** key to switch to the count mode.
APW	Allows numeric APW entry	Enter the Average Piece Weight and press the **APW** key.
ENDCT	Prompts to end counting	Add pieces until done and press the **ENDCT** key.
RESTART	Returns to beginning of macro	Press the **RESTART** key to start over.
CLEAR	Changes from Count to Weight	Press the **CLEAR** key to return to weight.
ID	Enters data into ID register	Prompts for selected ID field.
RECL DB	Recalls record from database	Enter ID # and press the **RECL DB** key to recall the record from the database.
RESET	Clears all and resets macro	Press the **RESET** key to clear all registers and begin again.
PRINT	Prints labels	Press the **PRINT** key. (For selected print format)
NEXT	Entry for any non-scale step	Do your non-scale related step and press the **NEXT** key to continue.
ACCUM	Adds display to accumulator	Press the **ACCUM** key to add to the Accumulator register.
SAVE DB	Saves the record to database	Press the **SAVE** key to save the record to the database.
ADD CT	Adds the count to database	Press the **ADD CT** key to add the count to the database.
SUB CT	Subtracts count from database	Press the **SUB CT** key to subtract the scale count from the database.
BASE	Switches active base	Prompts to switch to selected base.
SAVE TL	Saves a transaction record	Press the **SAVE TL** key to enter a Transaction Log record.
SET PTS	Displays set point registers	Press the **SET PTS** key to display the sets point registers.
LOW	Enters number in low register	Enter the low limit and press the **LOW** Key.
TARGET	Enters number into the target	Enter the target limit and press the **TARGET** key.
HIGH	Enters number in high register	Enter the high limit and press the **HIGH** Key.
X UNIT	Enters beginning # in sequence	Enter the beginning # of the series and press the **X UNIT** key.
Y UNIT	Enters ending # in a sequence	Enter the ending # of the series and press the **Y UNIT** key.
UNITS	Switches units for active base	Prompts to switch to selected weighing unit.
EXIT	Exits macro	Press the exit key to end the Macro.

Macro Step ID
If the ID step is selected when programming a macro, the following menu is displayed:



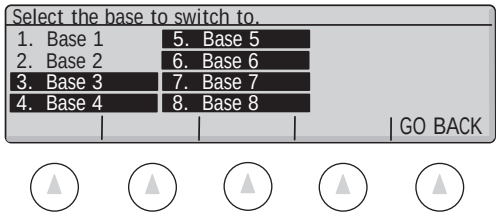
Using the numeric keypad, select the field to prompt for ID entry.

Macro Step **PRINT**
If the PRINT step is selected when programming a macro, the following menu is displayed:



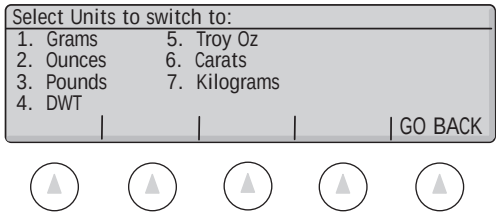
Using the numeric keypad, select the desired Print Register for printing.

Macro Step **BASE**
If the BASE step is selected when programming a macro, the following menu is displayed:



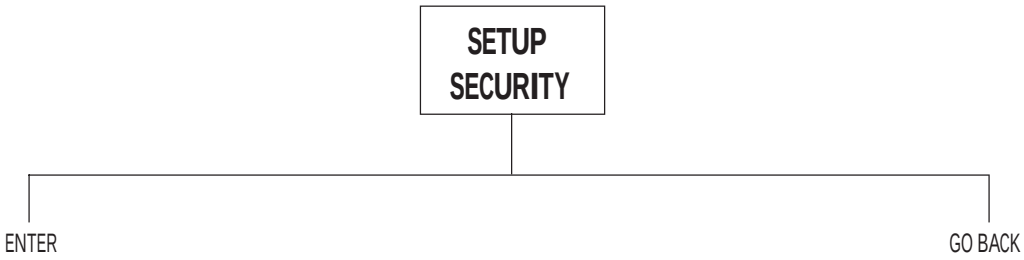
Using the numeric keypad, select the Base # to switch to.

Macro Step **UNITS**
If the UNITS step is selected when programming a macro, the following menu is displayed.



Using the numeric keypad, select the desired unit of measure.

Supervisor Setup Menu: Soft Key SETUP SECURTY



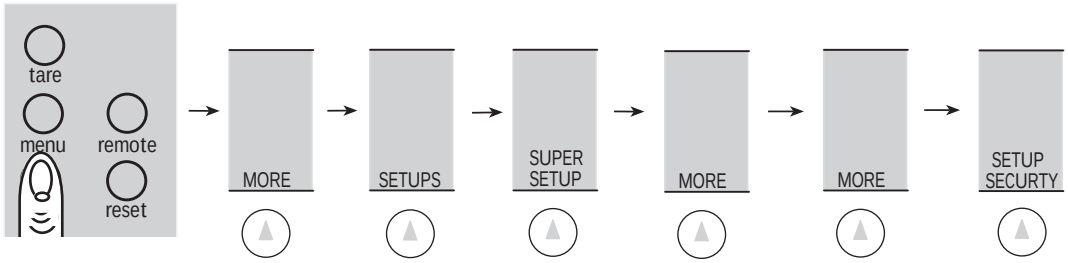
Soft Key:

SETUP SECURTY

Setting Supervisor Password Protection

This setup allows the set up of password protection for the Supervisor Setup menu.

To access the SETUP SECURITY menu, either follow the menu tree or press the keys in the order listed below:



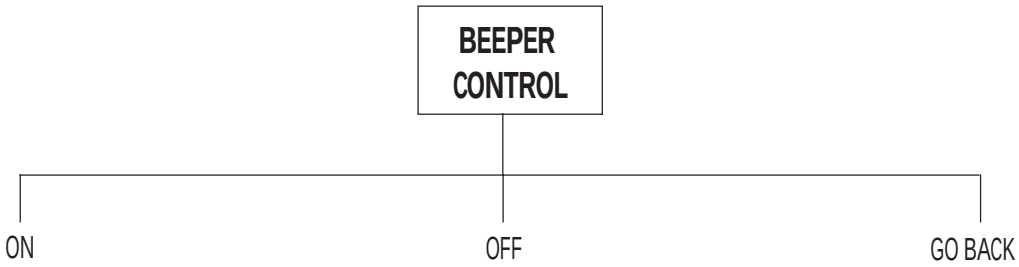
A password up to 10 characters in length can be typed in using the alphanumeric keypad (**abc** key) followed by the **ENTER** soft key.

ex: Type **XYZ 123** followed by **ENTER**

If the **ENTER** soft key is pressed without entering any characters, password protection is canceled.

Note: Password is case sensitive.

Supervisor Setup Menu: Soft Key BEEPER CONTROL

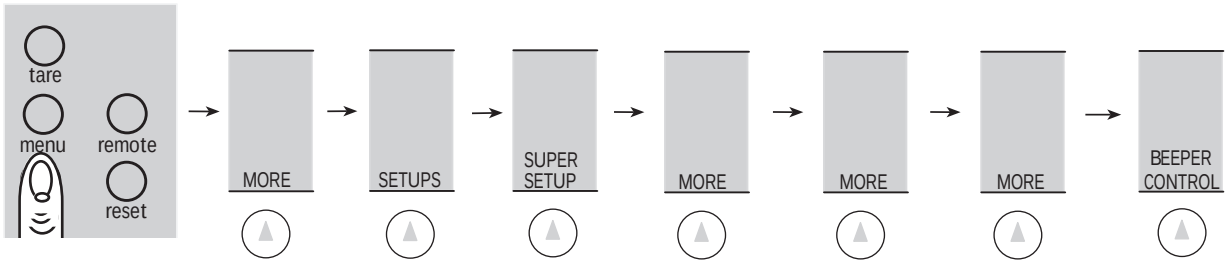


Soft Key:

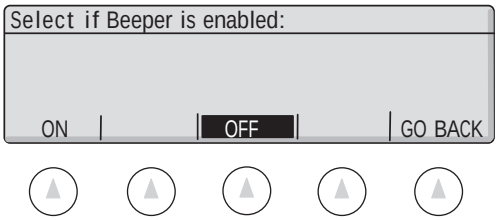
BEEPER CONTROL

Setting the Beeper to ON and OFF

To access the Beeper Control menu, either follow the menu tree or press the keys in the order listed below:



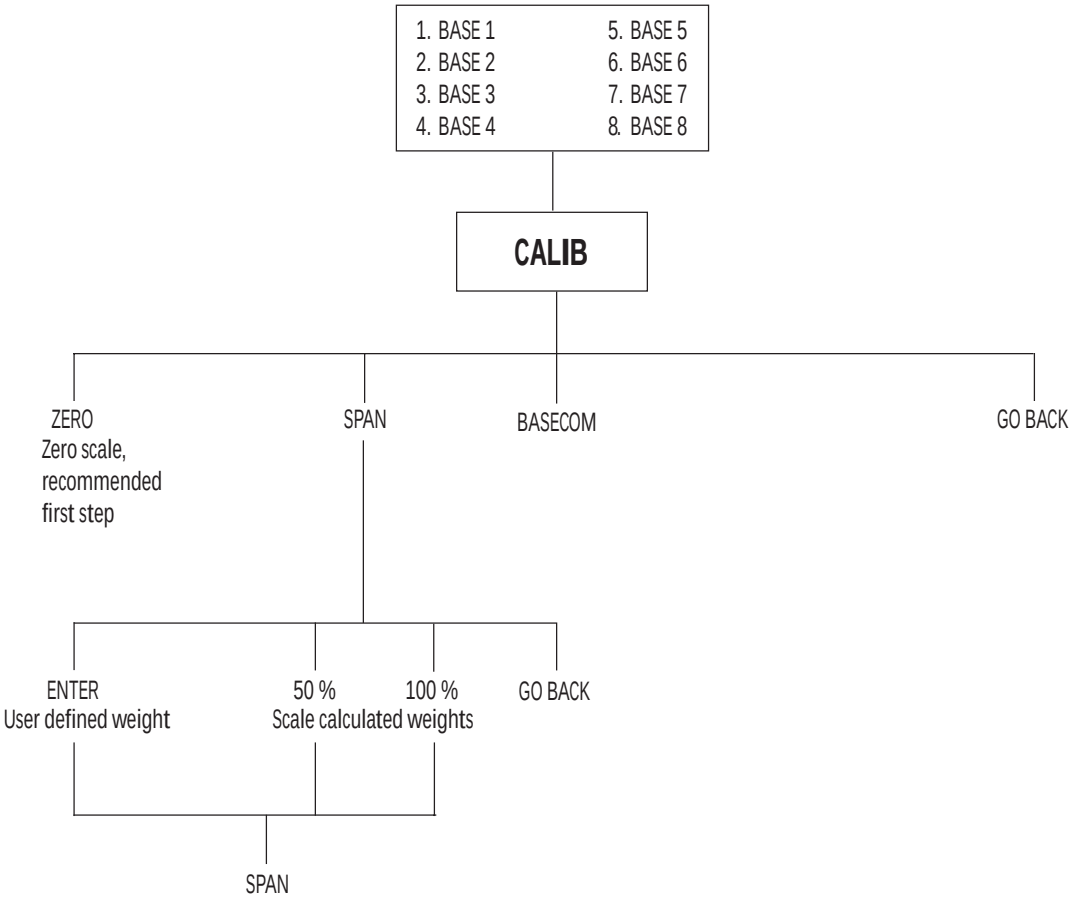
The following menu appears:



Select the **ON** soft key to enable the beeper and the **OFF** to disable the beeper.

Bases Setup

Bases Setup Menu: Soft Key CALIB



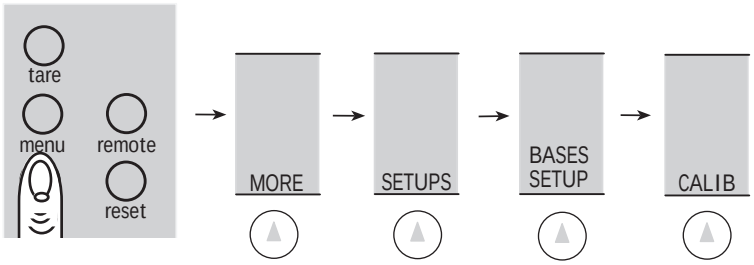
Soft Key:

CALIB

Calibration

There are two types of calibration available. The most common type of calibration is referred to as a span calibration which is a single point readjustment of the calibration curve to a known weight value. The scale MUST be span calibrated when first installed to compensate for gravity differences between the point of manufacture and the point of installation. The second type of calibration is called a linearity adjustment. Multiple weight values are assigned to the calibration curve using several calibration weights.
The scale can be span calibrated as often as desired. A linearity calibration should only be necessary if the scale is out of tolerance (non-linear) after a span calibration has been performed. Frequency of calibration is dependent on many factors such as use of the scale, changes in the environment surrounding the scale and accuracy goals. Consult your local scale dealer for a calibration schedule.

To access the CALIBRATION selection in the Bases Setup menu, follow the menu tree or press the keys in the order listed below:

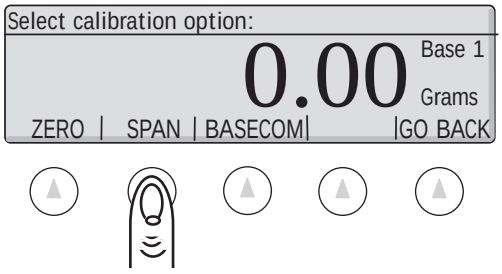


Press the **CALIB** soft key.

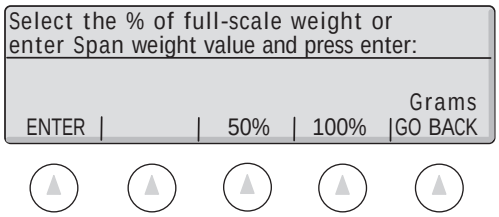
Before beginning either calibration procedure, the scale should always be level and in the weighing units of the calibration weight(s). Without anything on the pan, press the **ZERO** soft key and the message "Zero Base Process Activated" should appear on the top line.

SPAN Calibration

1. Press the **SPAN** soft key to enter the span calibration menu.



The soft keys will change to the following:



For the best results, the span weight should be as close as possible to the full-scale value or closest to the weight at which the scale is most often used.

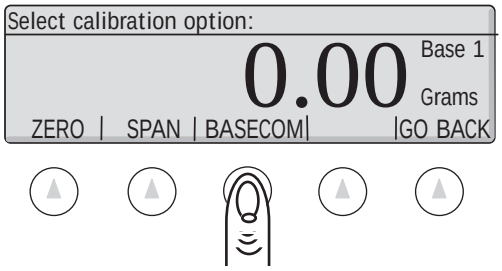
2. Using the numeric keypad, enter the value of the span weight followed by the **ENTER** soft key or choose either 50% or 100% of scale capacity for spanning weight.

3. Place the required weight on the pan and press the **SPAN** soft key.

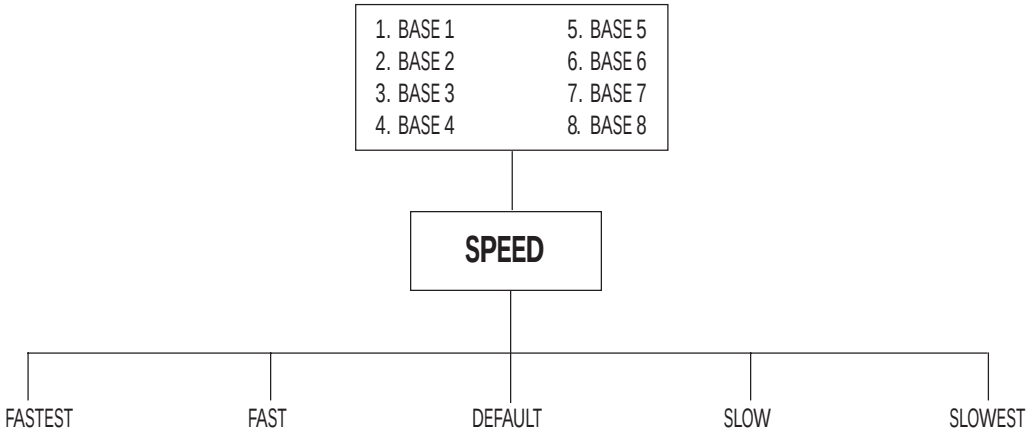
4. The scale will then perform a span calibration and display the weight value.

LINEARITY Calibration

Refer to your local factory authorized Setra scale dealer for an explanation of the Factory Menu that includes the linearity calibration procedure. The factory menu is accessed through the **BASECOM** soft key.



Bases Setup Menu: Soft Key SPEED



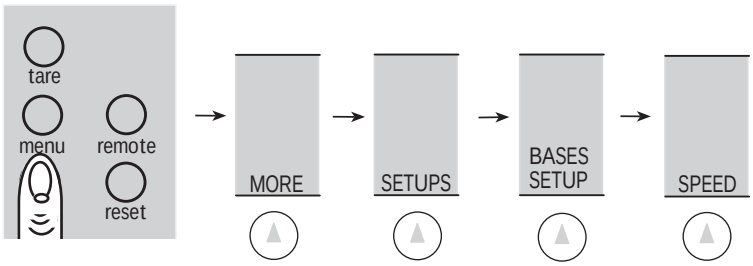
Soft Key:

SPEED

Setting the Display Update Rate (Speed of Change for the Display)

Depending on the environment or application for the scale, it may be necessary to change the rate at which the display responds to changes on the platter. For some filling applications, it may be helpful to put the scale into a fast update rate to prevent overshooting a target. Conversely, for environments with draft or vibration, a slower update rate may provide greater stability. It may be necessary to make a trade-off between stability and update rate.

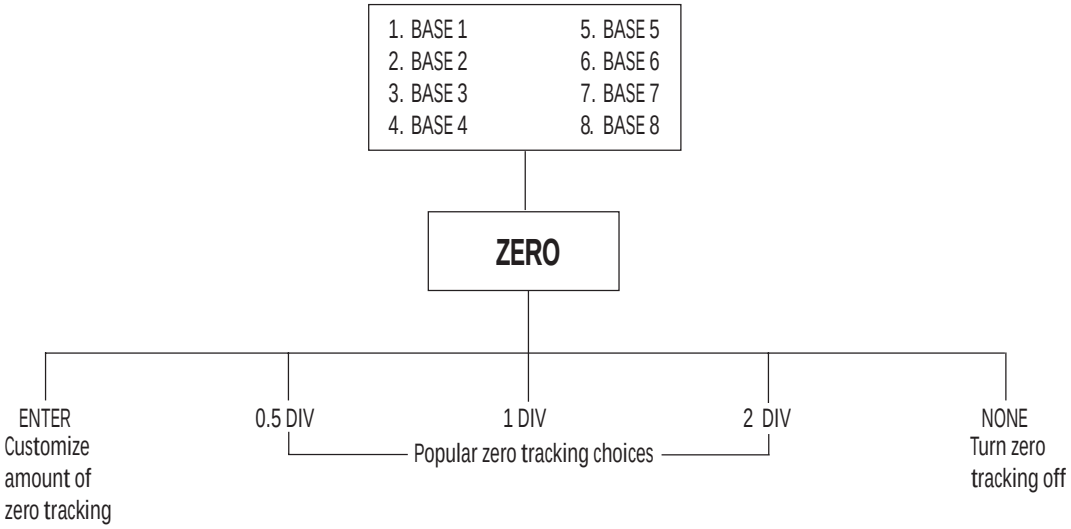
To access the SPEED setting in the Bases Setup menu, follow the menu tree or press the keys in the order



Press the **SPEED** soft key.

Simply choose the desired update rate by pressing the corresponding soft key.

Bases Setup Menu: Soft Key ZERO



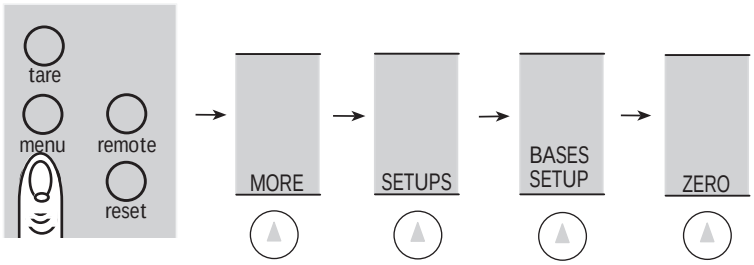
Soft Key:

ZERO

Setting the Level of Zero Tracking

The scale is programmed with a level of zero tracking designed to help the scale maintain zero weight in a normal operating setting. Zero tracking works by rejecting very small changes in weight as "noise" and keeping the display on zero. For certain applications, such as monitoring slow flow rates, zero tracking can be turned off. On the other hand, in "bad" or "noisy" environments, zero tracking can be increased to help the scale maintain zero weight when nothing is added to it.

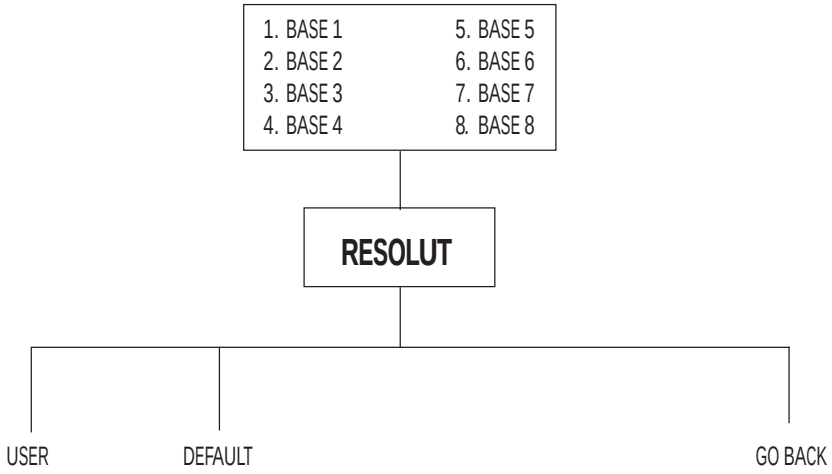
To access the ZERO setting in the Bases Setup menu, follow the menu tree or press the keys in the order listed below:



To enter a level of zero tracking, use the numeric keypad followed by the **ENTER** soft key or choose from the available options. A scale division is the smallest increment that the display is set to detect. The factory default is set for 1/2 division of zero tracking.

Note: A zero tracking window cannot be entered at greater than 100 displayed divisions.

Bases Setup Menu: Soft Key RESOLUT



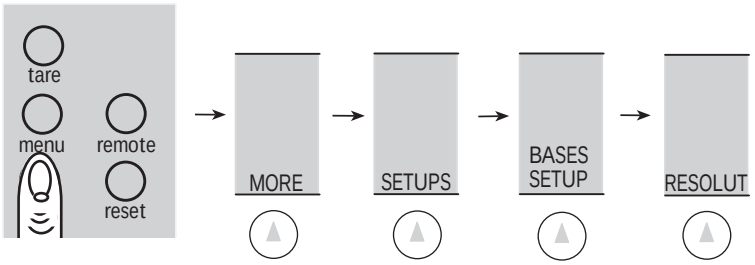
Soft Key:

RESOLUT

Setting the Resolution of the Displayed Weight

The high resolution Setra scale comes direct from the factory set at a readability that approximates the linearity characteristics of the scale. That is to say, after calibration, the displayed weight for any object placed into the center of the pan should not be off by more than the displayed increment from its true value. However, the scale is capable of detecting much smaller weight changes than those displayed as exemplified when counting very small pieces. The **RESOLUT** key can be used to increase displayed weighing resolution. Likewise, if the scale is not stable due to environmental factors such as draft or vibration, the resolution can be decreased to prevent display instability.

To access the RESOLUTION settings in the Bases Setup menu, follow the menu tree or press the keys in the order listed below:



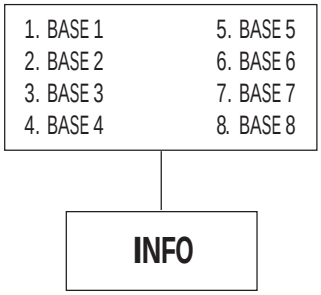
Press the **RESOLUT** soft key.

To program displayed increments, press the **USER** soft key. Using the numeric keypad, type in the last digit of resolution in grams followed by the **ENTER** soft key.

NOTE: Only resolutions up to a maximum of the sampling resolution , typically of 1 part in 1,000,000 will be accepted by the scale. All displayed resolutions in grams or any other unit of measure are rounded to the closest 1, 2, or 5 digit increment. Programmed resolutions that are greater than the factory default readability will be displayed with the last digit in reverse video as a notice to the user that the resolution is greater than the linearity characterisitics of the scale.

To return to the scale's default resolution which closely matches the scale's linearity, press the **DEFAULT** soft key.

Bases Setup Menu: Soft Key INFO

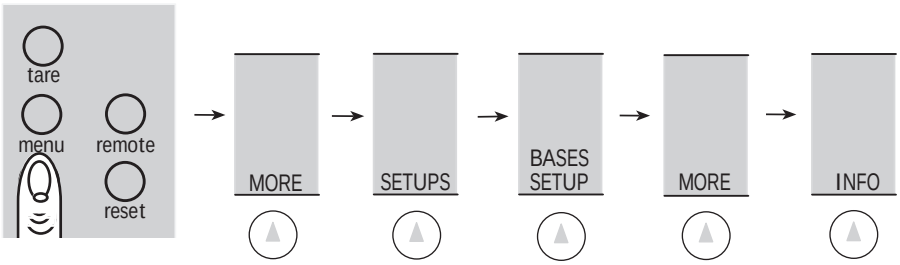


Soft Key:

INFO

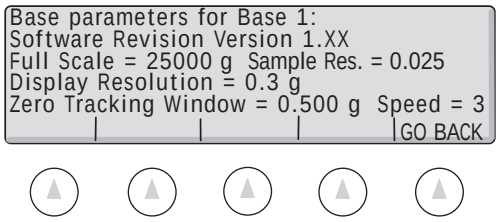
Checking Base Software Revision and Settings

To access the INFO selection in the Bases Setup menu, follow the menu tree or press the keys in the order listed below.

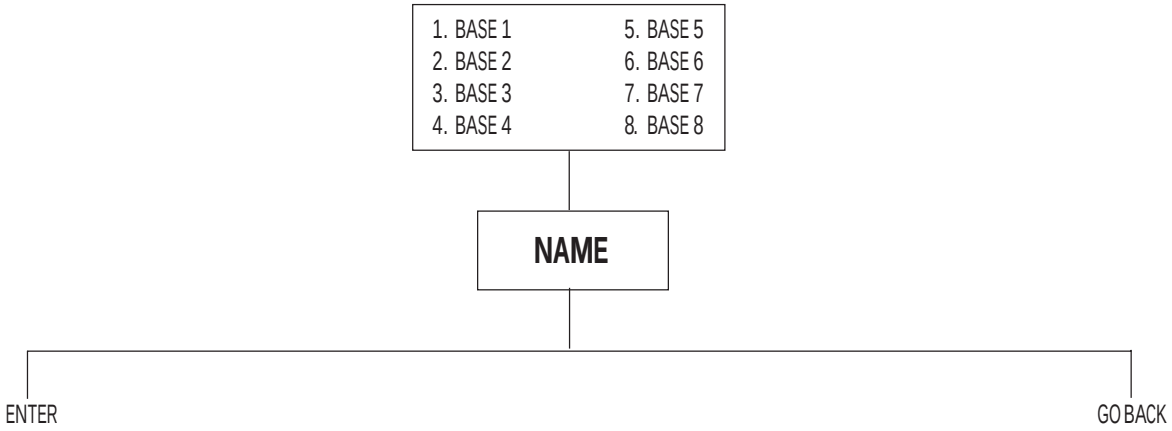


Press the **INFO** soft key.

The setup characterisitics of either a Setra or strain gauge load cell base can be recalled by pressing the **INFO** soft key. The following six characteristics will be displayed:


Base parameters for Base 1:
Software Revision Version 1.XX
Full Scale = 25000 g Sample Res. = 0.025
Display Resolution = 0.3 g
Zero Tracking Window = 0.500 g Speed = 3
GO BACK

Bases Menu: Soft Key NAME

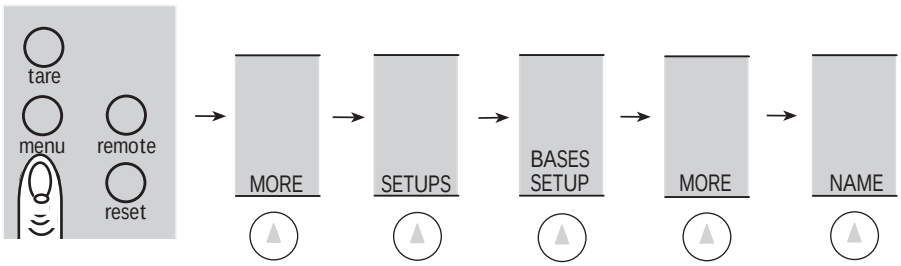


Soft Key:

NAME

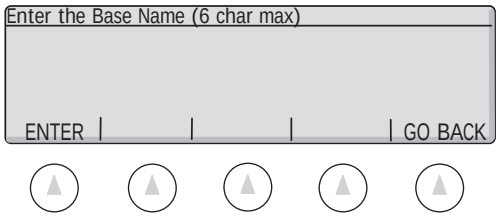
Changing the Name of a Base

To access the NAME selection in the Bases Setup menu, follow the menu tree or press the keys in the order listed below.



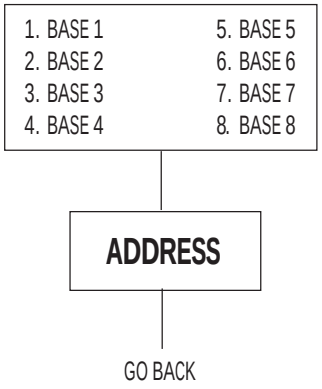
Press the **NAME** soft key.

The identification name of a base can be changed to help clarify its function. Examples of this are LOCAL and REMOTE for a dual scale system or SAMPLE, BULK, and PALLET for a three scale system.The only limitation when naming a base address is the six character description field.



Using the alphanumeric keypad (**abc** key), type in the new name followed by the **ENTER** soft key.

Bases Menu: Soft Key ADDRESS



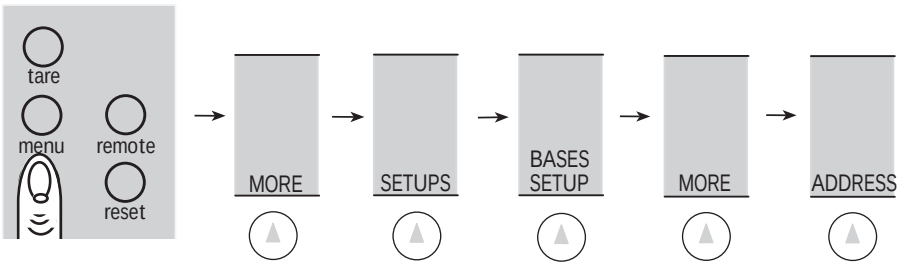
Soft Key:

ADDRESS

Changing the Address of a Single Base

The Super II controller is capable of communicating with up to eight separate bases. Each base on the scale network must have a unique address from 1 to 8. As a default, all bases come from the factory set to address 1. Additionally, the Remote Scale Option circuit boards for strain guage load cell remote bases come from the factory set to address 2. To access additional Setra or strain gauge load cell bases or to rename the current Setra or strain gauge load cell base, please follow the procedure below.

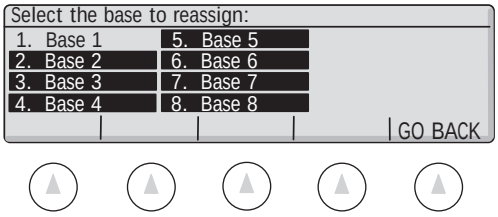
To access the ADDRESS changes in the Bases Setup menu, follow the menu tree or press the keys in the order listed below.



Press the **ADDRESS** soft key.

To add any additional bases beyond the standard Base 1 and Base 2 selections, or to reassign the address of existing bases, follow the procedure below:

1. Attach the Setra base to be reassigned directly to the controller.
2. Apply power to the base.
3. After scale countdown, the base will appear as Base 1 (or another number if it has already been reassigned).
4. Access the Bases Setup menu by following the above procedure.
5. Press the **ADDRESS** soft key.
6. A menu will appear showing all eight possible base selections and the names associated with each base number.



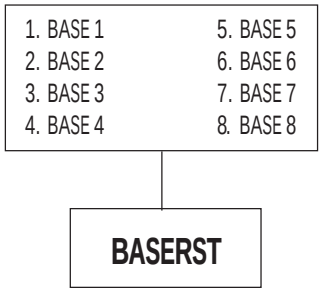
7. Using the numeric keypad, select the base address to reassign.

8. Using the numeric keypad, select the new address for the base.

9. Unplug the base with the new address changes and plug it into the base which will be connected to the controller (Base 1).

NOTE: Once a network is setup with not more than one base per address, you can switch base addresses without powering down the system.

Bases Menu: Soft Key BASERST



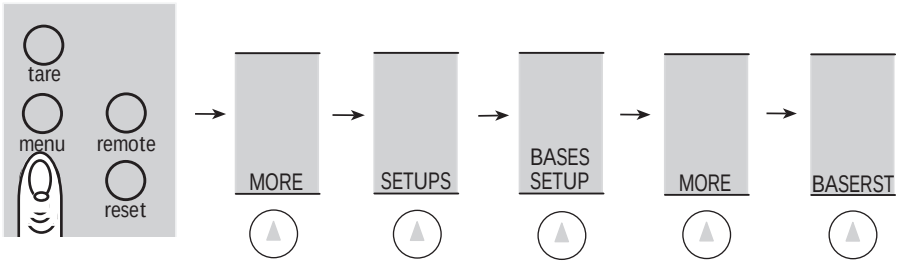
Soft Key:

BASERST

Resetting the Base

There may be times that the controller and the base network are out of sync. One example of this is the addition of a base without the powering down of the controller. Base reset will cause the controller to poll all addresses and search for bases.

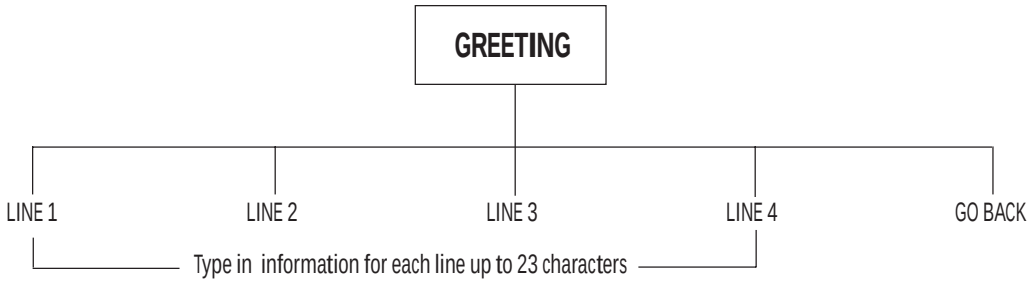
To access the BASE RESET selection in the Bases Setup menu, follow the menu tree or press the keys in the order listed below:



Press the **BASERST** soft key to start the polling process.

Technical Setup

Technical Setup Menu: Soft Key GREETNG



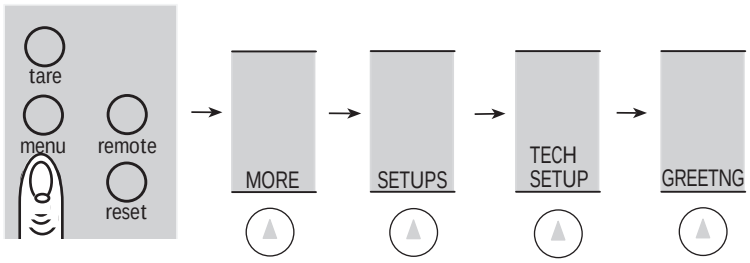
Soft Key:

GREETNG

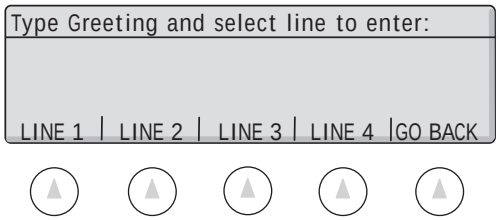
Setting the Power-Up Greeting

When power is first applied to the scale, a greeting message is displayed showing the time and date along with Setra's address and telephone number. This occurs during the 30 second countdown procedure while the scale performs a self-test. The greeting can be changed to a custom message. We recommend either a dealer's name and telephone number for service or the end user's name and address to denote property ownership.

To access the power-up greeting message, either follow the menu tree or press the keys in the order listed below:

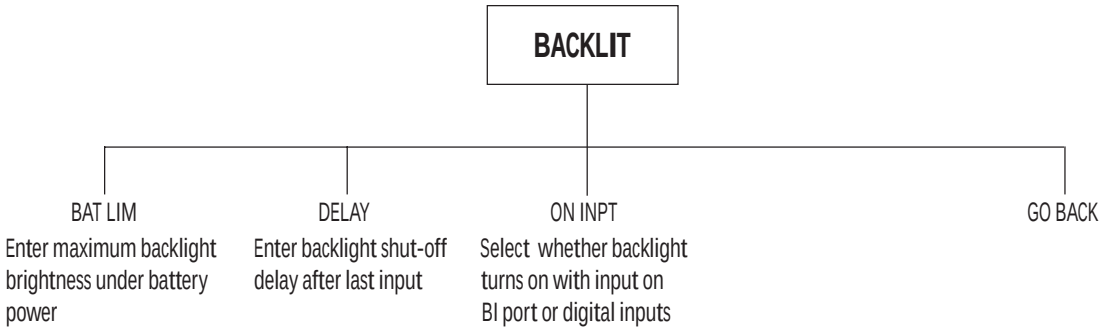


There are four lines of 23 characters available to set the desired greeting message.



Using the alphanumeric keypad (**abc** key) or PC keyboard, type in the desired message for each line (up to 23 characters) and press the **LINE #** key to specify where the text should appear.

Technical Setup Menu: Soft Key BACKLIT


BACKLIT
BAT LIM
Enter maximum backlight brightness under battery power
DELAY
Enter backlight shut-off delay after last input
ON INPT
Select whether backlight turns on with input on BI port or digital inputs
GO BACK

Soft Key:

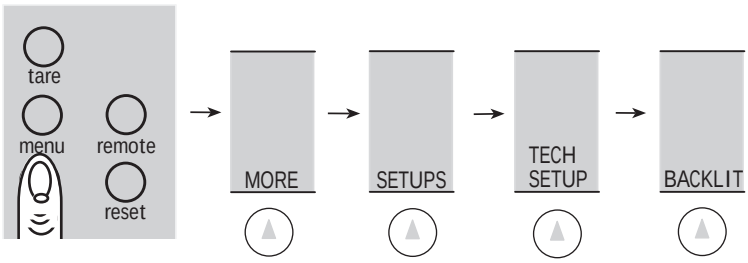
BACKLIT*

Backlighting of the Display

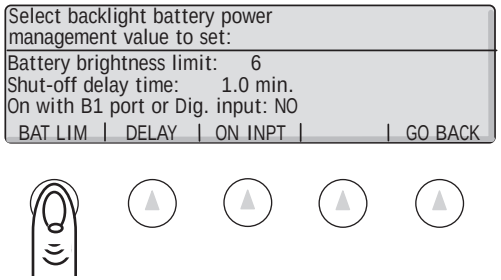
Adjustment of the backlight brightness can be done at any time from the front panel keys. Pressing and holding the **abc** key and then pressing the left arrow key will decrease the brightness of the display. Pressing and holding the **abc** key and then pressing the right arrow key will increase the brightness of the display.

The controller can detect whether the scale is running off a (12 volt) battery or a (16 volt) AC adapter. The scale can be set up to reduce the backlight brightness when running on batteries to save battery life. In addition, the backlight will shut off when powered by batteries if the scale is not in use. Both of these battery saving features are configurable.

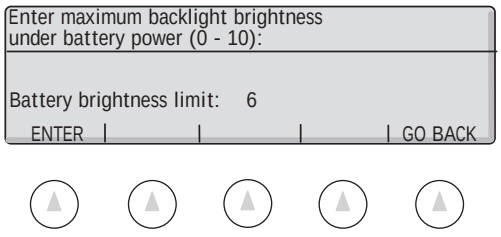
To access backlighting battery power saving features, either follow the menu tree or press the keys in the order listed below:



After pressing the **BACKLIT** soft key in the Technical Setups menu , the following screen will appear:


Select backlight battery power management value to set:
Battery brightness limit: 6
Shut-off delay time: 1.0 min.
On with B1 port or Dig. input: NO
BAT LIM | DELAY | ON INPT | | GO BACK

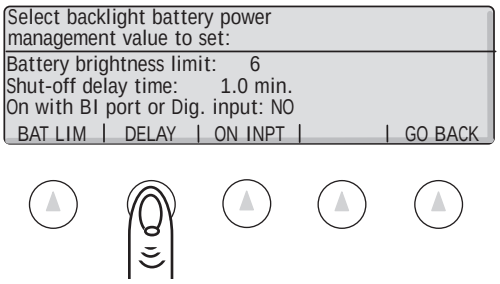
If the **BAT LIM** soft key is pressed, the following display appears:



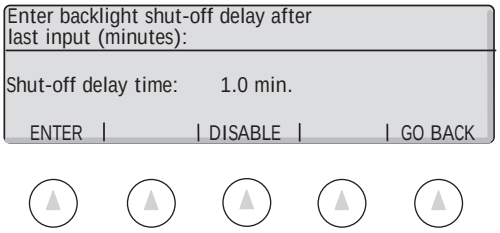
Brightness can be set to a whole number value between 0 (backlight off under battery power) to 10 (full backlight brightness available under battery power). The factory default setting for the battery limit is 6.

* For scales with the backlight option.

Press the **DELAY** key:

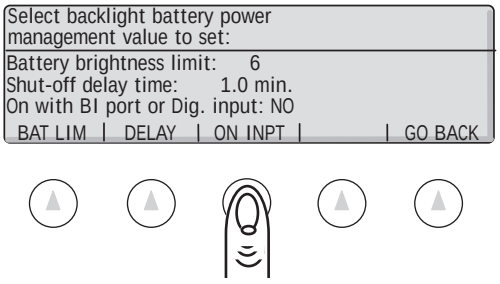

Select backlight battery power
management value to set:
Battery brightness limit: 6
Shut-off delay time: 1.0 min.
On with BI port or Dig. input: NO
BAT LIM | DELAY | ON INPT | | GO BACK

The following screen appears:

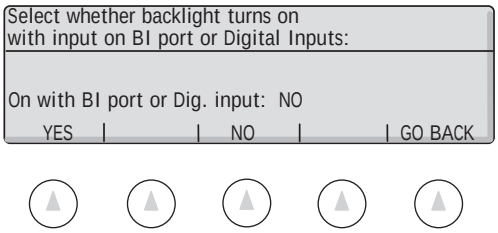


Using the numeric keypad, press the desired power saving delay followed by the **ENTER** soft key. When performing automated scale functions, such as computer communications through the BI port or control by process equipment through the digital inputs, the back light will remain off. This behavior can be changed using the ON INPT function.

Press the **ON INPT** soft key:

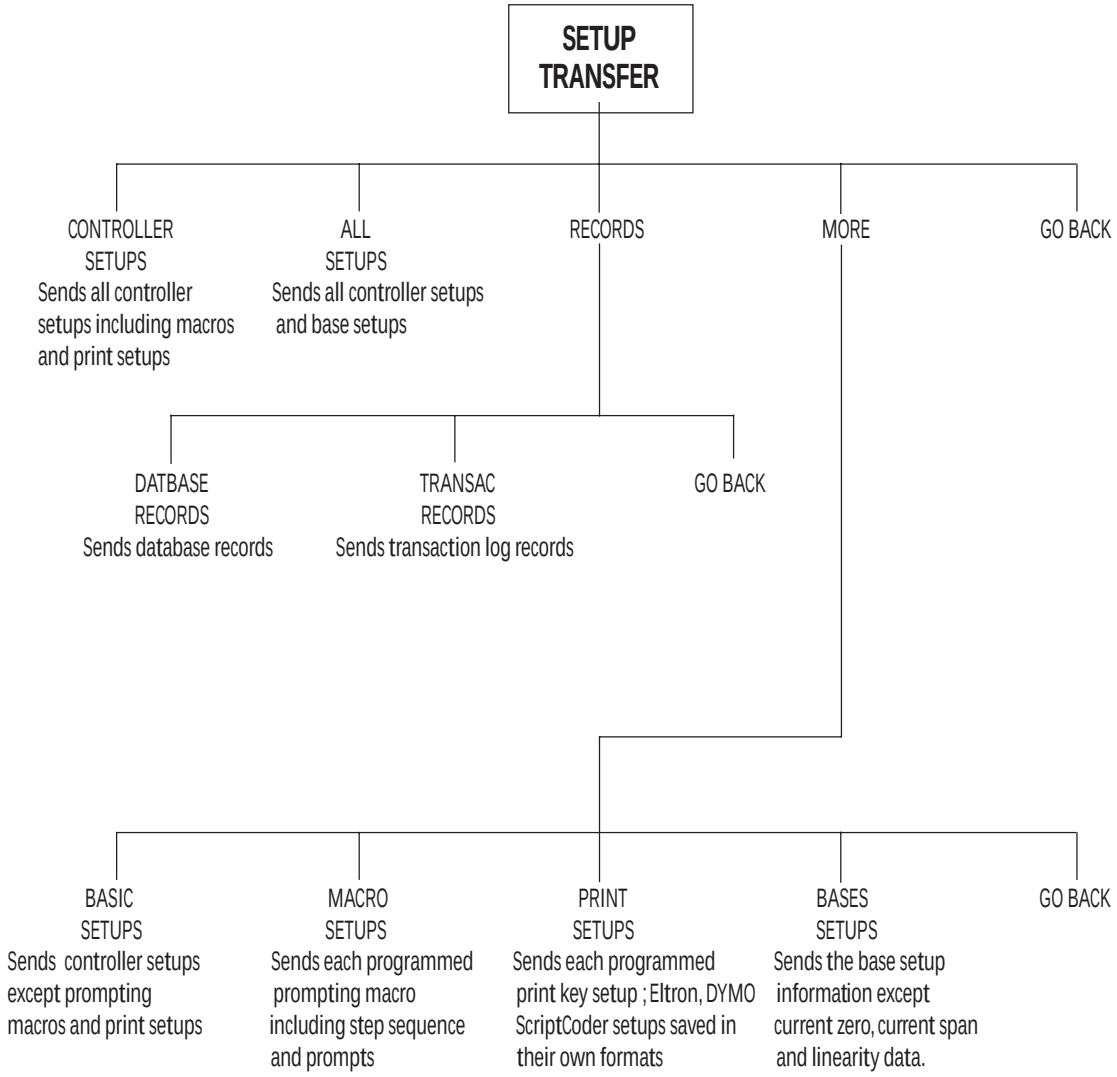

Select backlight battery power
management value to set:
Battery brightness limit: 6
Shut-off delay time: 1.0 min.
On with BI port or Dig. input: NO
BAT LIM | DELAY | ON INPT | | GO BACK

The following screen appears:



The supervisor can select automatic reactivation of the backlight if input is received on the Bi-Directional Serial Port or one of the Digital Input lines. The default is NO.

Technical Setup Menu: Soft Key SETUP TRANSFR


SETUP TRANSFER
CONTROLLER SETUPS
Sends all controller setups including macros and print setups
ALL SETUPS
Sends all controller setups and base setups
RECORDS
MORE
GO BACK
DATBASE RECORDS
Sends database records
TRANSAC RECORDS
Sends transaction log records
GO BACK
BASIC SETUPS
Sends controller setups except prompting macros and print setups
MACRO SETUPS
Sends each programmed prompting macro including step sequence and prompts
PRINT SETUPS
Sends each programmed print key setup ; Eltron, DYMO ScriptCoder setups saved in their own formats
BASES SETUPS
Sends the base setup information except current zero, current span and linearity data.
GO BACK

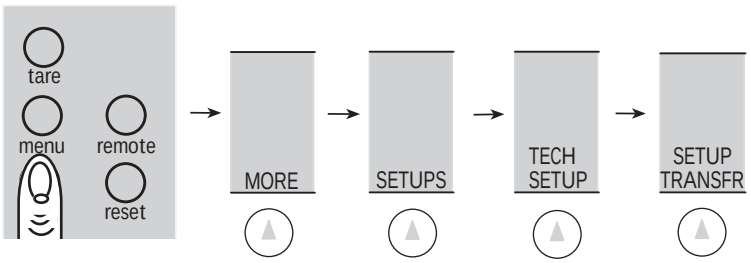
Soft Key:

SETUP TRANSFR*

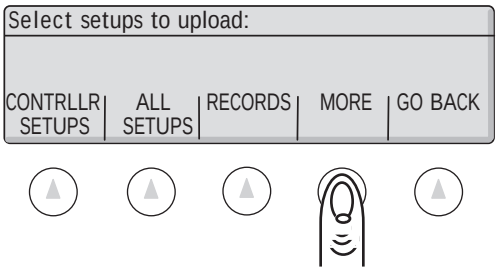
Transferring the Scale Setups to a Scale or Computer

The controller uses an interface language called the Setra Dialog Language (SDL). Using SDL, the setup information can be transferred to another scale or to a computer file in order to back up the scale setups. Through the SETUP TRANSFR menu, the entire scale setup, or a portion of the setups, can be sent out the BI port.

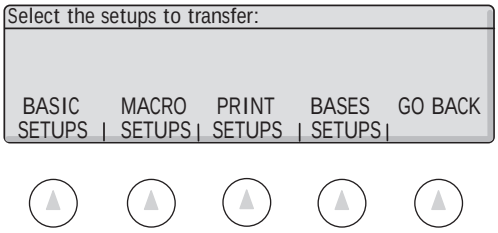
To access the SETUP TRANSFR menu, follow the menu tree or press the keys in the order listed below:



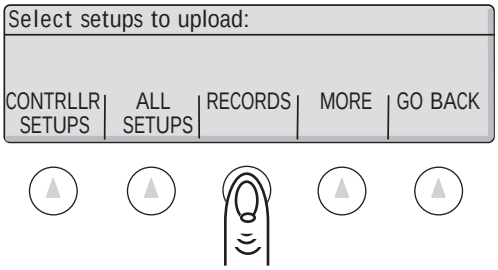
The following screen and soft keys appear:



Pressing the **MORE** soft key will display the following additional choices:

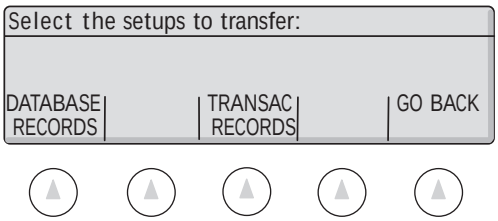


Press the **RECORDS** soft key:



* Available in Software Revisions 3.01 and higher.

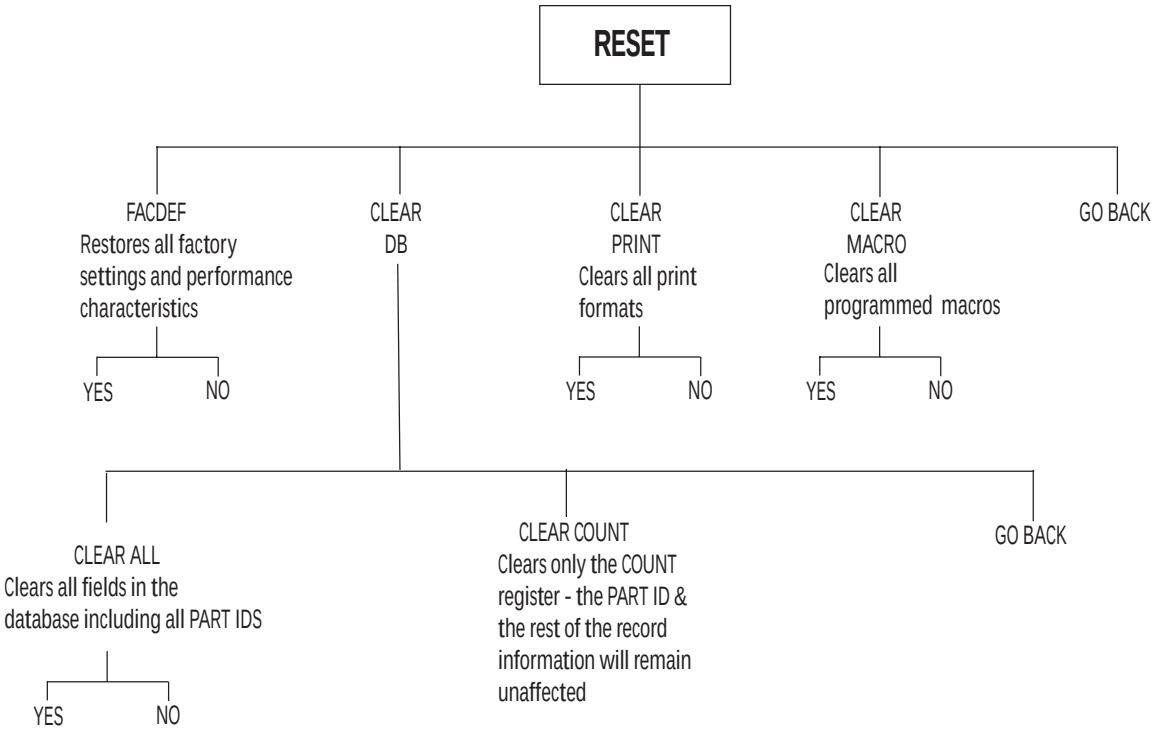
The following additional choices will be displayed:



Press one of the transfer options shown on the previous page to transfer some portion of the setups:

CNTRLLR SETUPS	Sends all the controller data including the prompting macros, print setups, and controller setups (see below). Does not transfer the bases setup, transaction log records or the database records.
ALL SETUPS	Sends all the above CNTRLLR setups as well as the base setups.
BASIC SETUPS	Sends the Controller setups described in this manual except the prompting macros and the print setups.
MACRO SETUPS	Sends each prompting macro that has been programmed. Eltron, DYMO, and ScriptCoder setups are saved in their own format.
BASE SETUPS	Sends the base setup information. The following items are not base setup information and cannot be read from the base: the current zero, the current span, and the linearity data.
DATBASE RECORDS	Sends the database records.
TRANSAC RECORDS	Sends the transaction log records.

Technical Setup Menu: Soft Key RESET



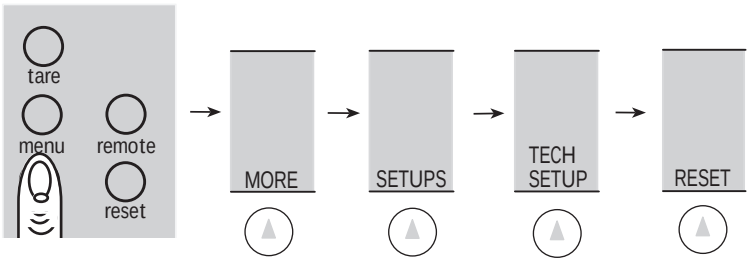
Soft Key:

RESET

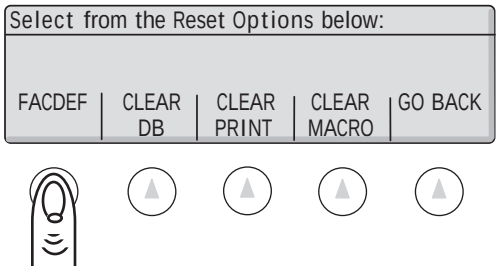
Resetting the Factory Defaults and Clearing the Database, Print Registers, and Macros

Due to the programming flexibility of the scale, it may sometimes be desirable to go back to the factory defaults as a launching point for new customization. To view the scale's setups, send them to a computer or printer by using the CONTROLLER SETUPS selection in the **SETUP TRANSFR** soft key section of this manual. Separately, the scale's Database, Print Registers, and Macros can each be cleared or reset for new programming.

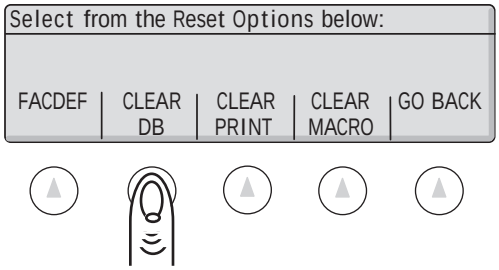
To access the RESET menu, follow the menu tree or press the keys in the order listed below:



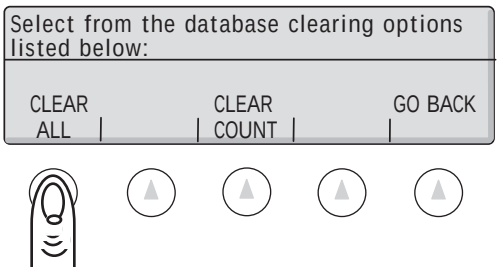
There are four RESET choices available:



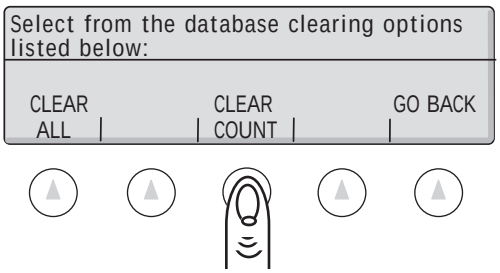
FACDEF will restore all scale peformance parameters and RS232 setups to the factory default settings.



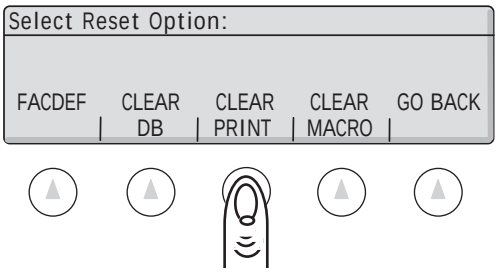
CLEAR DB will bring up the following options:



CLEAR ALL will clear all database fields including the PART ID (ID0) and leave the database completely empty. The transaction log is not affected.

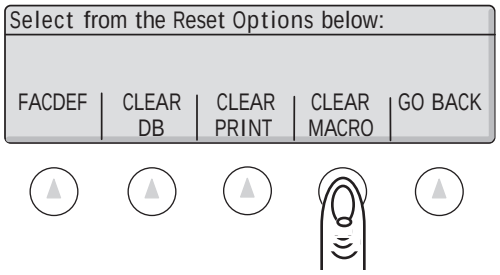


CLEAR COUNT will reset only the accumulated count register back to zero for each record in the database to allow the same pieces to be recounted. The transaction log is not affected.

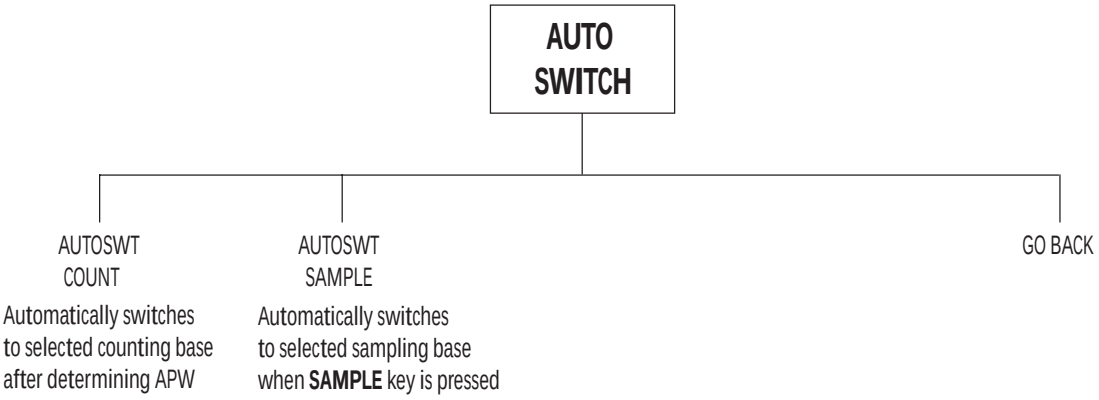


CLEAR PRINT will clear all 10 print registers and leave them completely empty.

CLEAR MACRO will clear all 10 prompting Macro registers and leave them completely empty.



Technical Setup Menu: Soft Key AUTO SWITCH


AUTO SWITCH
AUTOSWT COUNT
Automatically switches to selected counting base after determining APW
AUTOSWT SAMPLE
Automatically switches to selected sampling base when **SAMPLE** key is pressed
GO BACK

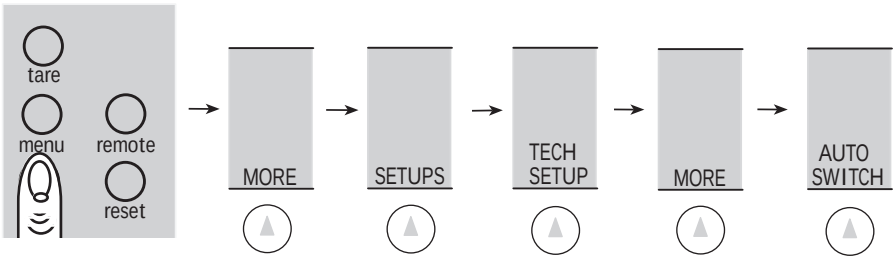
Soft Key:

AUTO SWITCH

Selecting Special Remote Scale and Multiple Base Switching Options

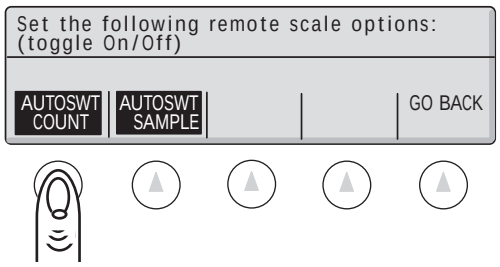
This setup allows selection of special features for use in a two or more base scale system. There are two setup options available that are listed below.

To access the AUTO SWITCH menu, either follow the menu tree or press the keys in the order listed below:

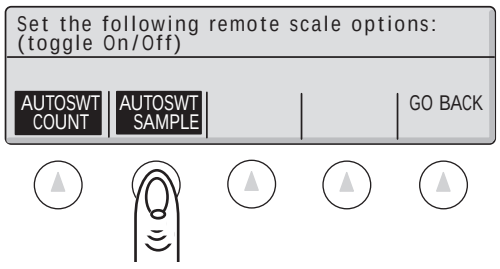


Make a selection from the following two choices:

AUTOSWT COUNT: When this feature is active, the controller will automatically switch to a specified base after an APW is determined.

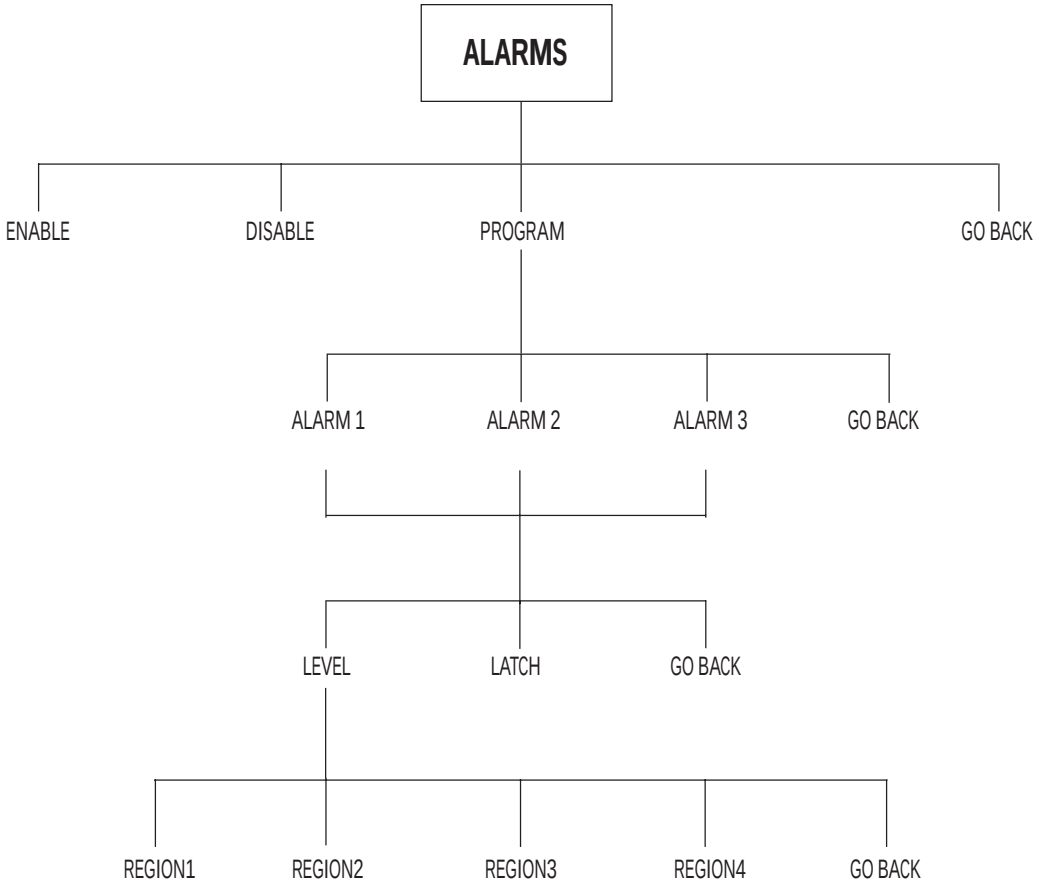


AUTOSWT SAMPLE: When this feature is active, the controller will automatically switch to a specified base whenever the SAMPLE key is pressed.



Note: Please refer to the BASES SETUP menu if necessary to rename the bases to LOCAL and REMOTE or SAMPLE and BULK or any other name, up to six characters.

Technical Setup Menu: Soft Key ALARMS



Soft Key:

ALARMS

Setting Up the Alarm Outputs

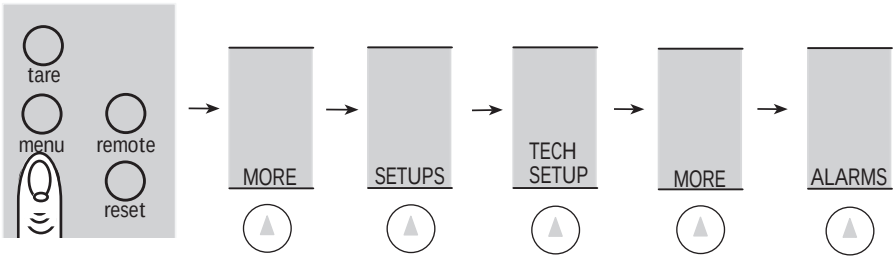
The controller has three digital alarm outputs that can be used to control an external system. The alarm output pins are located in the OUT port. The state of the alarm is based on the weight of the scale relative to the set points (see the SETPOINTS soft key in the USER'S MANUAL). The alarm pins are held at either Ø volts (LO) or 5 volts (HI).

There are three set points that the operator can program: Low, Target and High. The set points can be programmed to any weight as long as the Low set point is lower than the Target set point and that, in turn, is lower than the High set point. The three set points create four weight regions. Region 1 covers all weights lower than the Low set point. Region 2 is between the Low and Target set points. Region 3 is between the Target and the High set points. Region 4 covers all weights greater than the High set point. Each alarm can be programmed to be either LO or HI in each of the four regions.

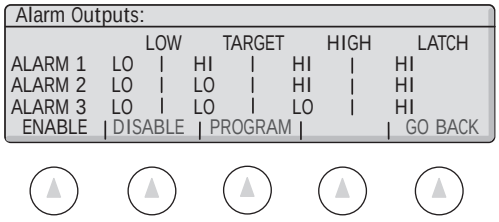
The alarm can be configured to be either latching or non-latching. When in the latching mode, once an alarm output has changed state, it will remain in the new state until a reset signal is received (the reset signal can be sent through the digital inputs, the keypad, or an SDL command).

When the alarms are programmed, the user menu selection SETPOINT changes to ALARMS. The functionality of the SETPOINT remains in the menu selection, but extra controls are added for operating the alarms. See the "User Manual" for further details.

To access the ALARMS menu, follow the menu tree or press the keys in the order listed below:

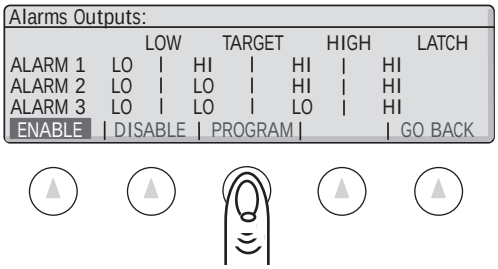


Choose from the options below:

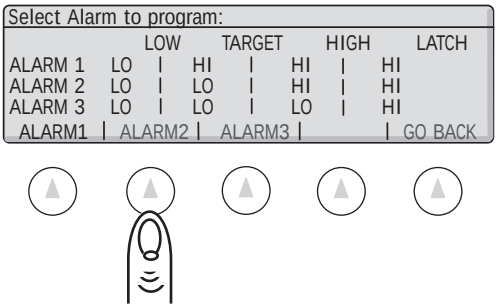


When the alarms are disabled, all the outputs are set to their zero weight states. When the alarms are enabled they follow the chart shown on the ALARM OUTPUTS screen where LO indicates that the alarm pin will be 0 volts relative to ground and HI indicates 5 volts. Thus, on the display shown below, when the weight is between the TARGET and HIGH set points the output of ALARM1 is HI, ALARM 2 is HI, and ALARM 3 is LO. Use the soft keys to enable and disable the alarms. Press the **PROGRAM** soft key to program the chart.

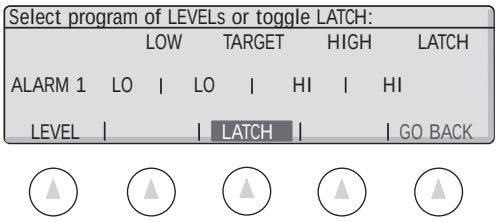
When the program key is pressed,



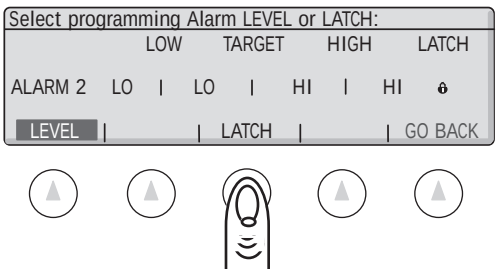
the following soft keys are shown:


Select Alarm to program:
LOW TARGET HIGH LATCH
ALARM 1 LO | HI | HI | HI
ALARM 2 LO | LO | HI | HI
ALARM 3 LO | LO | LO | HI
ALARM1 | ALARM2 | ALARM3 | | GO BACK

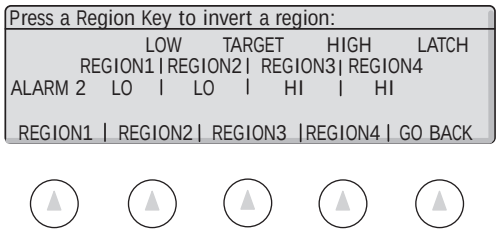
Select **ALARM1**, **ALARM2**, or **ALARM3** to program a particular alarm. When you select an alarm, the following display appears:



If the **LATCH** soft key is pressed, a "lock" is displayed in the LATCH column, causing the alarm to be latching (see above description). If no symbol is present in the LATCH column, the alarm is non-latching.

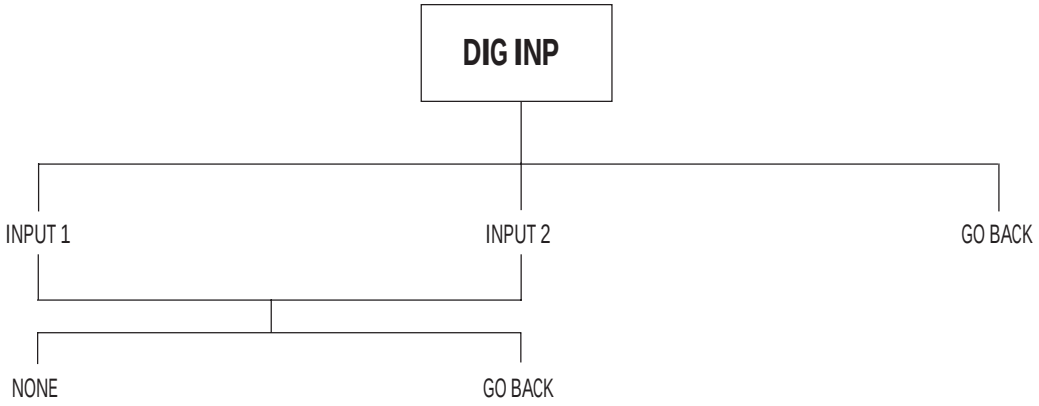


Press the **LEVEL** soft key to set the behavior of the alarm in a particular region. The following screen and soft key is displayed:


Press a Region Key to invert a region:
LOW TARGET HIGH LATCH
REGION1 | REGION2 | REGION3 | REGION4
ALARM 2 LO | LO | HI | HI
REGION1 | REGION2 | REGION3 | REGION4 | GO BACK

Pressing one of the keys marked REGION will toggle the behavior of the alarm from LO to HI or vice-versa for the region selected.

Technical Setup Menu: Soft Key DIG INP



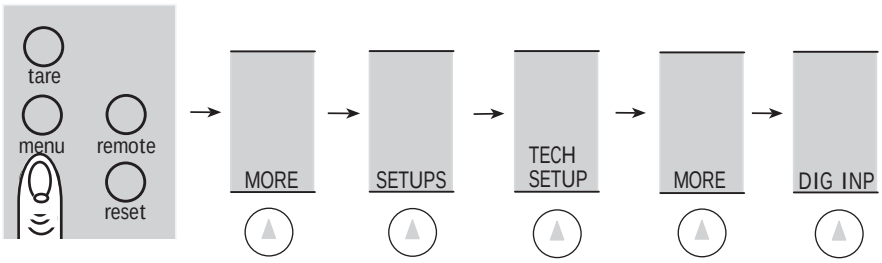
Soft Key:

DIG INP

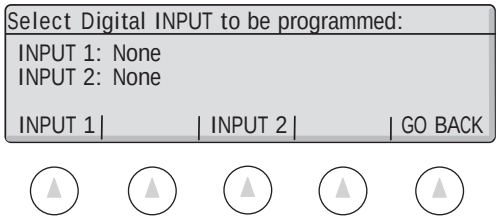
Setting the Digital Inputs

Digital Inputs allows an external system to signal the contoller to perform an action. There are two digital input ports: Input 1 is located on pin 3 of the IN port and Input 2 is located on pin 5 of the IN port. The input port is triggered when the voltage on the ports goes from Ø volts (off) to 5 volts (on). When an input is triggered, the controller performs a preselected action. The list of actions that can be selected include zeroing, taring, printing, accumulating the weight or count, controlling the alarms, and controlling the prompting macros.

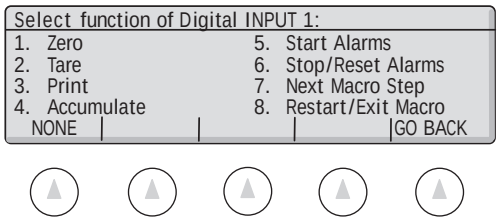
To setup the DIGITAL INPUTS either follow the menu tree or press the softkeys in the order below:



The following menu is displayed and the soft keys change to:

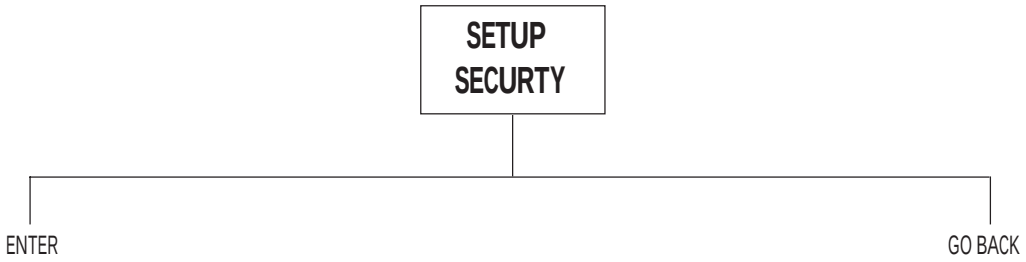


The screen shows the current function that the INPUT 1 and INPUT 2 digital ports are programmed to perform. Select the **INPUT 1** or the **INPUT 2** soft keys to program the input port function.
Pressing the **INPUT 1** or **INPUT 2** soft key will make the following menu and soft keys appear:



Using the numeric keypad, make your selection for the function of either INPUT 1 or INPUT 2.

Technical Setup Menu: Soft Key SETUP SECURTY



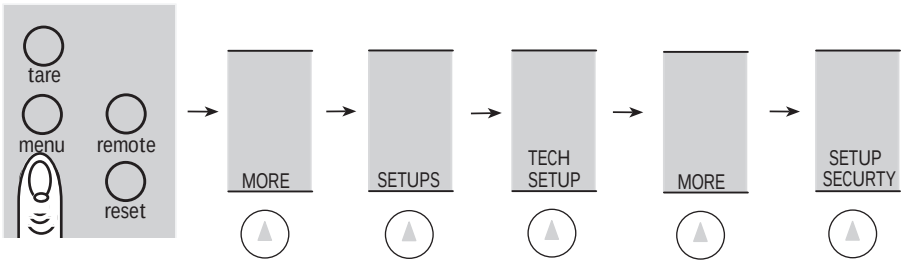
Soft Key:

SETUP SECURTY

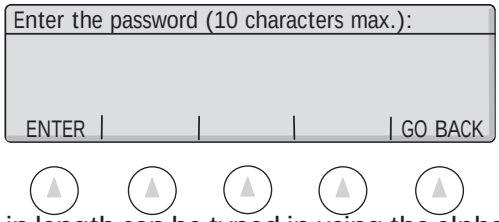
Entering Technical Setup and Bases Setup Password Protection

This setup allows the setup of password protection for the Technical Setup and Bases Setup menus.

To access the SETUP SECURITY menu, either follow the menu tree or press the keys in the order listed below:



The following menu is displayed and the soft keys change to:



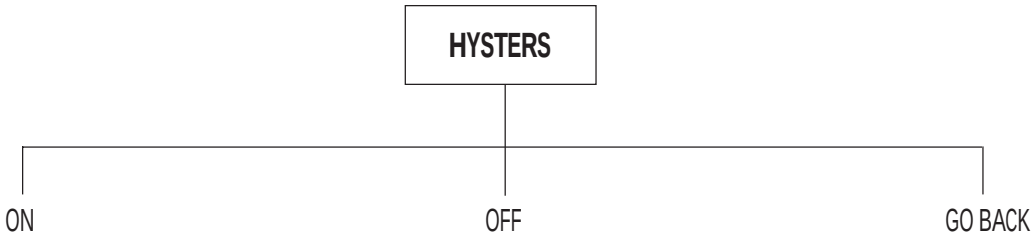
A password up to 10 characters in length can be typed in using the alphanumeric keypad (**abc** key) followed by the **ENTER** soft key.

ex: Type **XYZ 123** followed by **ENTER**

If the **ENTER** soft key is pressed without entering any characters, password protection is canceled.

Note: Password is case sensitive.

Technical Setup Menu: Soft Key HYSTERS



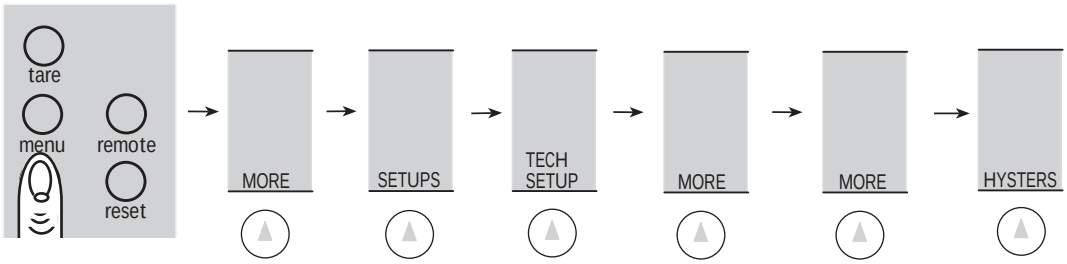
Soft Key:

HYSTERS

Improving Display Stability

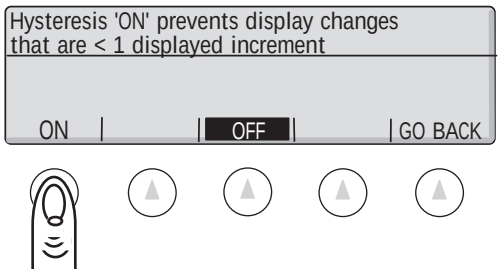
DISPLAY HYSTERESIS

Display hysteresis refers to the function which prevents the apparent "jumpiness" of a display that is toggling between two weight readings. For example, if a weight is equal to 235.65 grams on a display set to be read by .1 grams, the display may have trouble settling between 235.6 and 235.7. Display hysteresis will prevent any changes to the display that are less than 1 displayed increment. Hysteresis should only be turned on if the environment is unstable but the user requires the readability and update rate of the current settings.



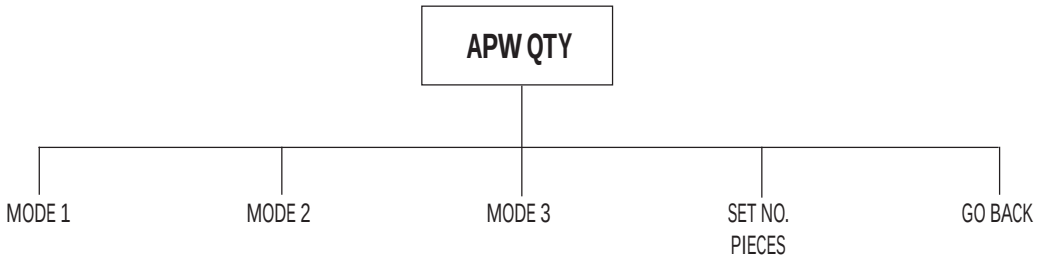
1. Access the HYSTERS setups menu by following the steps outlined above.

2. Press **ON** to activate display hysteresis.



NOTE: Hysteresis is OFF by default.

Technical Setup Menu: Soft Key APW QTY



Soft Key:

APW QTY

Changing the APW Quantity Feature

The APW quantity feature is used to change the storage method of the APW. Normally, the APW, or Average Piece Weight, represents the average weight of a single piece. Using the APW Quantity feature, the APW can be made to represent the weight of a number of pieces. Thus, if the need is to count dozens of pieces, set the APW quantity to 12 and the APW displayed and printed will be the weight of a dozen pieces.

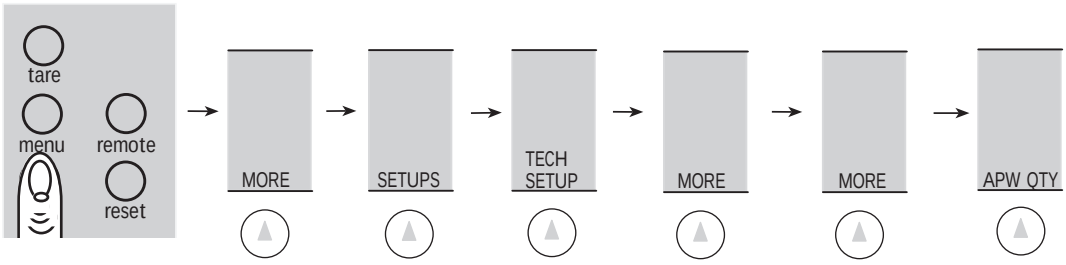
The APW mode sets the behavior of the scale when a new part is counted. The following APW quantity modes are available:

Mode 1: APW Single Piece Mode
APWs are always entered and reported as the average piece weight of a single piece determined by dividing the number of pieces in a sample into the total sample weight.

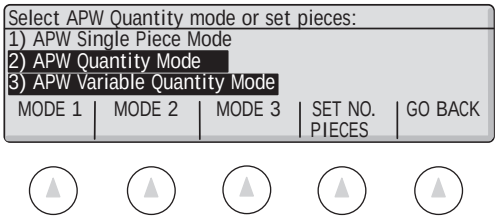
Mode 2: APW Quantity Mode
APWs are always entered and reported as the net weight of a pre-determined quantity of pieces. This quantity is set using the **SET NO./PIECES** soft key. For example, when using an APW Quantity of 1000, the scale will treat the entered APW value as the net weight of 1000 pieces and will use this value to determine the total count from the weight on the pan.

Mode 3: APW Variable Quantity Mode
Similar to the APW Quantity Mode, this selection sets the scale's default entry and reporting of the APW to be based upon the net weight of a specific quantity, but allows the scale to receive APWs through the RS232 port (from bar codes or from a PC) that are defined using the net weight of a different number of pieces. The scale will temporarily use the net weight of a different number of pieces received through the RS232 port until the **RESET** key is pressed. For example, in this mode a scale set up for entry of APW 1000 will allow the use of APWs entered as the net weight of one piece if the APW is scanned from a bar code label. By pressing **RESET,** the scale will revert back to accepting keyboard entry of APW 1000.

To access the APW quantity setup, follow the menu tree or press the keys in the order listed below:

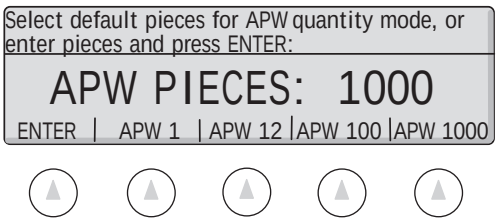


The following screen and soft keys will be displayed:



Select the APW quantity mode desired using the **MODE 1**, **MODE 2**, or **MODE 3** soft keys.

Press the **SET NO. PIECES** soft key to display the following screen and soft keys: Either select a predefined APW quantity from the soft keys or enter a custom APW quantity using the numeric keypad and press enter.



RS232 Serial Port Communications

The Super II comes equipped with three RS232 ports. They are labelled **BI**, for a "bi-directional" port for PC or computer communications, **OUT** for an "output" port for a printer, and **IN** for an "input" port for a bar code scanner. Users who have purchased Setra's peripherals such as the Dymo SETRA 300 printer or the Setra SmartWand can simply plug these devices into the appropriate port and start using them. The first part of this appendix describes the RS232 command and communication protocol. The second part of the appendix describes the characteristics of the ports.

Interfacing a Setra Super II Scale to a Computer

The bi-directional port interface not only allows the scale to transmit data to and from a computer, but also enables a computer to control a scale. Since the baud rate and databits of this interface are selectable (see **PORTS** soft key setup in this manual), virtually any computer or terminal with an RS232 port can be connected to the scale. Setra Super II does *not* support software handshaking and supports hardware handshaking only on the "bi-directional" port . This section describes the conventions and formats used to communicate with the Super II.

Sending Commands to the Scale

All functions which exist on the keyboard may also be accessed by a computer or a terminal by means of the RS232 interface. Simply send the ASCII character which corresponds to a function. These characters are shown in the following table:

FUNCTION	ASCII	FUNCTION	ASCII
APW	A	ID5	Y
ID 7	B	ZERO	Z
COUNT	C	immediate print	#
ID 1	D	ID start	/
exponential	E	ID finish	$
ID9	F	• or recall	•
GROSS/NET toggle	G	REMOTE	>
ID 6	H	0	0
integration filter	I	1	1
jump code	J	2	2
CLEAR	K	3	3
ID 3	L	4	4
ACCUMULATE	M	5	5
ID 4	N	6	6
SAMPLE	O	7	7
PRINT	P	8	8
APW quantity	Q	9	9
ID 2	R	TARGET SETPOINT	^T
ID Ø	S	LOW SETPOINT	^L
TARE	T	HIGH SETPOINT	^H
ID8	U	x counter	^X
verify	V	y counter	^Y
wake-up	W	add accumulate	^+
RESET	X	subtract accumulate	^-

Never include a carriage return or line feed in any command sequence. The scale uses any command character as a terminator for an input string.

For example, to enter a tare weight of 1000 (in the units currently being displayed), simply send "1000T". This will enter the number 1000 into the TARE register. To enter an average piece weight of 12.35, send "12.35A".

Sending Alphanumeric ID #s to the Scale

Alphanumeric identification information (ID#s) may be entered into the scale through the RS232 interface.

Since Setra scales recognize upper-case ASCII characters as commands, it is necessary to begin alphanumeric entries with the "/" command or start ID character.

To enter an ID# from a computer or bar code scanner, the following string must be sent to the scale:

/ [ID string] $ (ID register character)

The ID START (or introducer) "/" instructs the scale to ignore subsequent characters as commands. The ID FINISH (or terminator) "$" instructs the scale to interpret subsequent characters as commands. Everything between ID START and ID FINISH will be stored as the ID string. The ID register character (see the table below) instructs the scale to enter the string identifier into the ID# register.

The following table lists all ID register characters:

ID register #	ID register character
0	S
1	D
2	R
3	L
4	N
5	Y
6	H
7	B
8	U
9	F

ID register #1, 5, 7, 8, and 9 are not cleared when the **reset** key is pressed or when the unit is powered off. These are referred to as non-volatile fields. ID register # 0, 2, 3, 4, and 6 are volatile and are cleared upon reset and powering down.

The string identifier may consist of any printable ASCII character including upper case and lower case (A-Z), numbers (0-9), punctuation (! . , : ; ? ' ") and symbols, ( ), [ ], { }, / \, +, = , *, %, &, #, < >, @ except the "$". It may be up to 23 characters in length. All other characters are ignored by the scale.

DO NOT SEND A CARRIAGE RETURN, <CR>, OR A LINE FEED, <LF>, WITHIN OR AFTER THE STRING IDENTIFIER.

Receiving Data From the Scale Using the Immediate Print Mode

The immediate print command "#" causes the scale to transmit whatever number or message appears in the scale display. The value is formatted as shown below:

+/- 1 2 3 4 5 6 . c0 c1 c2 c3 CR LF

The first six digits represent the number field. A + or - sign always precedes a weight reading, and a decimal point is always transmitted, though their exact location depends on the number transmitted. Numbers with less than six digits are preceded by spaces and the sign is always adjacent to the leading digit. The specific location of the decimal point depends on the precision of the number transmitted.

"c0" is the speed mode character.

CHARACTER	MEANING
F	Scale is set to fastest speed
f	Scale is set to fast speed
(space)	Scale is set to normal speed
s	Scale is set to slow speed
S	Scale is set to slowest speed

"c1" is the "mode" character. It describes what the number being transmitted represents. The following is a list of all possible mode characters:

CHARACTER	MEANING
(space)	Number field is a message or net weight
G	Number field represents GROSS weight
T	Number field represents TARE weight
A	Number field represents APW
M	Number field represents ACCUM contents

"c2" is the "units" character. It describes the units of the number being transmitted. The following is a list of all possible characters sent in this digit:

CHARACTER	MEANING
G	Number is expressed in grams
O	Number is expressed in ounces
P	Number is expressed in pounds
Y	Number is expressed in troy ounces
R	Number is expressed in carats
D	Number is expressed in pennyweights
K	Number is expressed in kilograms
X	Number is expressed in user programmable unit
C	Number is expressed in pieces

"c3" is the "stability" character. This character corresponds to the "OK" symbol on the display.

CHARACTER	MEANING
(space)	Reading is not stable
S	Reading is stable
O	Reading is over the base capacity
U	Reading is under the base capacity

The immediate print output is always terminated with a carriage return and line feed. To read data that may be stored in a specific memory register, instruct the scale to display the data held in the particular memory register by transmitting to the scale the memory recall command "." followed by the memory register of interest followed by the immediate print command "#". For example, to read the contents of the following registers, the following codes must be transmitted:

Register	**Transmit**
Tare	.T#
Accumulator	.M#
Count	.C#
APW	.A#
Gross	.G#
Net	.GG#

The following are some examples of immediate print output:

"– – – +1 2 . 3 - G P S" means that the GROSS weight is 12.3 lbs stable.
"– – – +1 0 0 0 0 - C -" means 10000 pcs, and the reading is not stable.
"– – – – + 8 4 . 6 - T O -" means that the TARE weight is 84.6 ounces.

Note: When the "#" immediate print command is entered via the IN port, output is via the OUTport; if the input is via the BI port, output is also via the BI port.

Interval Print Mode

For continuous data output, use the PRINT INTRVL selection in the **PRINT** soft key section of the Supervisor Menu to print the contents of the display every time a new reading or message is available. The rate at which data is updated is variable and ranges from once every 0.2 seconds up to once every 24 hours. This mode is useful if the computer scale software interface runs as a background process.

The Jump Function

The Jump Function causes the scale to immediately operate in a given weight unit. Using this function ensures that numbers, such as tare weight or average piece weight, entered through the RS232 interface are interpreted in the correct units. For example, if the average piece weight was stored by a computer in grams, it would be necessary to ensure that the scale was operating in grams prior to sending the APW to the scale. This feature is only available through the RS232 interface.

To use the Jump Function, send an **nJ** to the scale, where "J" is the Jump function command and "n" is the unit code. The units code ranges from 0 to 7 as shown:

Units Code	Unit
0	User programmable unit (default GRAINS)
1	GRAMS
2	OZ (ounces)
3	LBS (pounds)
4	TROY (troy ounces)
5	DWT (pennyweights)
6	CARATS
7	KG

Do not send any number other than 0-7. For example, to enter an average piece weight of 0.23456 grams from a computer, send "1J0.23456A". The "1J" sets the scale for operation in grams. The "0.23456A" tells the scale to enter that weight into the APW register. The Jump Function prevents misinterpretation of values entered from a computer.

The Quantity Function

The Quantity Function operates very much like the "jump function" for the APW. By sending a numeric value followed by the letter Q, the scale will then accept the APW that follows as the average piece weight of the specified number of pieces represented by the numeric value preceding Q. For example, to send 1.2345 lbs as the APW of 1000 pieces, the scale needs to receive "3J1000Q1.2345A" (the 3J to specify the lb units, 1000Q to specify 1000 quantity, and 1.23454A to specify the APW value).

An APW with a "Q" quantity can be entered with the scale in any APW Quantity mode but will only be displayed in the entered quantity if the scale is set to the "APW Variable Quantity Mode".

The Verify Function

When many scales or other peripherals are connected to a computer, it is sometimes useful for the computer to be able to check on the status of these devices. The verify function can be used to determine the model number of a scale and determine that the scale is functioning correctly. To invoke the verify function, transmit an ASCII "V". If the scale is functioning correctly, it will send out the following messages followed by carriage return and line feed:

"Model 409
Base 1 capacity XXXXX"

Status After Power is Applied

All Setra scales have an internal nonvolatile memory for storing certain status information. This memory does not erase when power is removed from the unit. All setup functions (such as print format, minimum pieces, minimum accuracy, baud rate, and data base information) are stored in this memory. As a result, the baud rate and print format will not need to be reset each time the scale is turned on.

During the first 30 seconds of operation, the scale will run through a self-diagnostic procedure. When the unit is ready to be used, it will identify itself by transmitting a "wake-up" message. (This message can also be invoked by sending a "W" to the scale.)

"Model 409
High Precision Weighing and Counting System
Software Rev X.XX
Base 1 Capacity XXXXX"

The RS232 Interface Hardware

Although Setra scales can communicate with almost any RS232 device, the built-in interface does not include the complete protocol. Only the transmit and receive lines of the standard interface are used on the OUT and IN ports respectively, and the transmit, receive, RTS and CTS lines on the BI port.

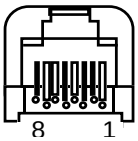
The default data format is:
1 start bit
8 data bits including parity
1 stop bit
10 bits per frame (framing errors ignored)

NOTE: The scale will transmit using the parity selected; however it does not check the parity it receives.

All serial ports use an eight pin modular connector. The pinout is as follows:

BI

1. ground
2. transmit out
3. receive in
4. RTS (Request To Send)
5. CTS (Clear To Send)
6. no connection
7. ground
8. ground



Modular Jack Connector
(in back of controller)

OUT

1. ground
2. transmit out
3. no connection
4. Alarm 1
5. Alarm 2
6. no connection
7. ground
8. Alarm 3

IN

1. ground
2. no connection
3. receive in
4. Digital Input 1
5. Digital Input 2
6. +5V
7. ground
8. Digital Input 3

NOTE: The "handshake" signals "Clear To Send" (CTS) and "Request to Send" are implemented on the BI poer only. This requires that the peripheral attached to the IN and OUT ports have a minimal buffer (15 characters).

In addition, some computers requiring hardware handshaking will need a connection between two pins on the computer's connector named DTR and DSR (Data Terminal Reading and Data Set Ready).

The maximum recommended cable length is 15 meters. The cable may be longer if it has less than 2,500 pF capacitance. The load impedance of the device connected should be between 3,000 and 7,000 ohms with not more than 2,500 pF shunt capacitance. For more information, consult EIA Standard RS232: "Interface Between Data Terminal Equipment Employing Serial Data Interchange."

ScriptCoder™ Custom Label Printing

Your Super II scale can be programmed to print custom label designs on any serial printer, limited only by the printer's capabilities. This feature, called ScriptCoder™, allows a label design or RS232 output, to be written using a series of codes which are stored in the scale's memory. The set of codes, or script, is executed each time the specific label design is selected to print. The script can be written to create a customized output to a serial dot matrix printer, thermal bar code printer, or even a data collection device. The Super II can store up to ten different scripts.

Ways to Create and Store a Script

A script contains preprogrammed text and data which is transmitted from the scale to the printer when the appropriate print command is executed. There are four ways to create and enter a script; the best method to use depends on the complexity of the label design and the peripherals available to the programmer.

The first method may be performed using only a Super II and involves entering codes directly through the scale keypad. The second method involves the use of a QWERTY keyboard to enter a combination of characters and codes. The third method involves scanning codes into the scale using a bar code menu chart available in the ScriptCoder Label Design & Cable Kit (Setra P/N 404910). Finally, the fourth method involves writing the script using the ScriptCoder PC program and downloading it to the scale via the BI RS232 port (also available with the ScriptCoder kit).

Entering a Script via the Super II Keypad

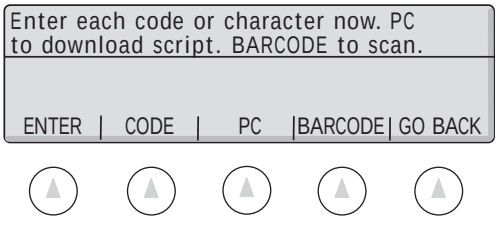
All of the codes required for a script may be entered directly through the scale keypad. This method is most suitable for simple label designs as shown in the following examples:

Part #: 123-456
APW: 2.56789 g

The following transmission sequence would be required from the scale:

- transmit the text "Part #:" and one space
- transmit the contents of the ID register
- transmit one carriage return and one line feed
- transmit the text "APW:" and one space
- transmit the contents of the APW register and one space
- transmit the unit designation letter
- transmit one carriage return and one line feed (for longer spacing or to feed between labels add linefeeds or a formfeed to the end of this script to advance to the next label)

Before a script can be entered into the scale's print memory, the scale must be setup to accept the programming codes. To perform this setup, follow the instructions under soft key **PRINT** in the Supervisor Setups section of this manual. The following is the Script entry menu.



To produce the ASCII output below, enter the following script by using the numeric keypad followed by the **CODE** soft key for each code. For alphanumeric characters, enter a single character and press the **ENTER** key. To look up the numeric code associated with each character or scale function, refer to the tables on page 116 through 120.

```
Part #:    123-456
APW:     +2.56789 G
```

SCRIPT - Part #: (ID 0 is default register) <CR><LF>
CODES - 80 CODE, 97 CODE, 114 CODE, 116 CODE, 32 CODE,
35 CODE, 58 CODE, 32 CODE, 128 CODE, 13 CODE, 10 CODE

SCRIPT - APW: (APW register) (Units ltr) <CR><LF>
CODES - 65 CODE, 80 CODE, 87 CODE, 58 CODE, 32 CODE, 141 CODE,
32 CODE, 149 CODE, 13 CODE, 10 CODE [to add line feeds enter 10 CODE here; to add a form feed enter 12 CODE here.]

DONE [to end script]

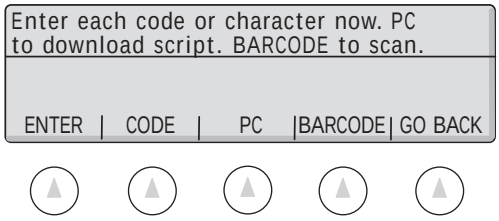
Each time the **PRINT** soft key is pressed (followed by the Print Register # if not the default), the scale will output the above ASCII format and advance the printer to the next line or label.

Entering a Script using a QWERTY Keyboard

Simple scripts, such as the ASCII output above, can be more easily programmed by connecting a QWERTY keyboard to the Super II controller. By using a combination of typed characters and numeric codes, the entire script can be entered using the QWERTY keyboard.

Before a script can be typed in using a QWERTY keyboard, the scale must be setup to accept the formatting characters and programming codes. To perform this setup, follow the instructions under soft key **PRINT** in the Supervisor Setups section of this manual.

The following is the Script entry menu.



To produce the same ASCII output below, the script can be entered using the QWERTY keyboard. Type in alphanumeric characters followed by the F1 function key or numeric formatting and scale registers codes followed by the F2 function key.

Part #: 123-456
APW: 2.56789 g

SCRIPT - Part #: (ID 0 is default register) <CR><LF>
QWERTY KEYBOARD- P (F1), 2 (F1), r (F1), t (F1), : (F1), _ (F1),
128 (F2), 13 (F2), 10 (F2)

SCRIPT - APW: (APW register) (Units ltr) <CR><LF>
QWERTY KEYBOARD- A (F1), P (F1), W(F1), : (F1), _ (F1), 141 (F2), (F1),
149 (F2), 13 (F2), 10 (F2)[to add line feeds enter 10 (F2)
here; to add a form feed enter 12 (F2) here.]
(F5) [to end script]

Each time the **PRINT** soft key is pressed (followed by the Print Register # if not the default), the scale will output the above ASCII format and advance the printer to the next line or label.

Entering a Script Using a PC

Please refer to the ScriptCoder Operator's Manual in the ScriptCoder Label Design and Cable Kit. (Setra P/N 404910)

Entering a Script Using a Bar Code

Please refer to the ScriptCoder Operator's Manual in the ScriptCoder Label Design and Cable Kit. (Setra P/N 404910)

The following tables show the codes for the ASCII characters, ASCII control codes and Setra scale data codes.

ASCII Characters

A	65	a	97	0	48
B	66	b	98	1	49
C	67	c	99	2	50
D	68	d	100	3	51
E	69	e	101	4	52
F	70	f	102	5	53
G	71	g	103	6	54
H	72	h	104	7	55
I	73	i	105	8	56
J	74	j	106	9	57
K	75	k	107	space	32
L	76	l	108		
M	77	m	109		
N	78	n	110		
O	79	o	111		
P	80	p	112		
Q	81	q	113		
R	82	r	114		
S	83	s	115		
T	84	t	116		
U	85	u	117		
V	86	v	118		
W	87	w	119		
X	88	x	120		
Y	89	y	121		
Z	90	z	122		

Punctuation and Special Characters

!	33	[	91
“	34	\	92
#	35	]	93
$	36	^	94
%	37	—	95
&	38	‘	96
‘	39	{	123
(	40	|	124
)	41	}	125
*	42	~	126
+	43	backspace	251
,	44		
-	45		
.	46		
/	47		
:	58		
;	59		
<	60		
=	61		
>	62		
?	63		
@	64		

Setra Scale Data

ID 0	128	transmit ID field 0 "S" id
ID 1	129	transmit ID field 1 "D" id
ID 2	130	transmit ID field 2 "R" id
ID 3	131	transmit ID field 3 "L" id
ID 4	132	transmit ID field 4 "N" id
ID 5	133	transmit ID field 5 "Y" id
ID 6	134	transmit ID field 6 "H" id time
ID 7	135	transmit ID field 7 "B" id
ID 8	136	transmit ID field 8 "U" id
ID 9	137	transmit ID field 9 "F" id
Gross	138	transmit gross weight in external resolution
Net	139	transmit net weight in external resolution
Tare	140	transmit tare weight in external resolution
A.P.W.	141	transmit APW in internal resolution
A.P.W. exp.	142	transmit APW in exponential notation
Count	143	transmit count
Acc Count	144	transmit count accumulator value
Acc Ct Ents	145	transmit count accumulator entries
Acc Weight	146	transmit weight accumulator
Acc wt Ents	147	transmit weight accumulator entries
Units word	148	transmit units label, e.g., "grams" or "pounds"
Units ltr.	149	transmit units letter, e.g., "g" or "p"
Setra codes	150	ignored in scale, interpreted during setup to insert the appropriate scale control codes.
Units jump code	151	transmit units code number and J, e.g., "1J" or "3J"
X of "x or y seq."	152	transmits the X of the "X of Y" sequence.
Y of "x or y seq."	153	transmits the Y of the "X of Y" sequence.
Time	154	transmit the time hh:mm AM, from the Super II
Date	155	transmit the date mm/dd/yy from the Super II
Pause (.1)	156	Pause for a specified time before continuing to transmit the script. (Argument code 1 to 99, e.g., 5 = .5 second pause, 25 = 2.5 second pause.)

Format Codes

Format Length	160	Set the length of the field to be printed. (Argument code 1 to 99.)
Format Precision	161	Set the precision of the field to be printed. (Argument code 0 to 6.)
Format Sign	162	Transmit the "+" and "-" sign or only the "-" sign as appropriate. (Argument code "+" or "-", 43 or 45, respectively.)
Justification	163	Justify the field to the left or right. (Argument code "R" or "L", 82 or 76, respectively.)
Fill Character	164	The fill is the character to be repeated in order to justify the field and create the desired length. (Argument code: any printable character, e.g., "*","0", or space, 42, 48 or 32, respectively.)
Absolute Value	165	Convert the formatted number to absolute value
All Capitals	166	Convert all letters in print field to capitals

ASCII Control Characters

soh	1	ctrl A
stx	2	ctrl B
etx	3	ctrl C
eot	4	ctrl D
enq	5	ctrl E
ack	6	ctrl F
bel	7	ctrl G
bs	8	ctrl H
ht	9	ctrl I
lf	10	ctrl J
vt	11	ctrl K
ff	12	ctrl L
cr	13	ctrl M
so	14	ctrl N
si	15	ctrl O
dle	16	ctrl P
dcl	17	ctrl Q
dc2	18	ctrl R
dc3	19	ctrl S
dc4	20	ctrl T
nak	21	ctrl U
syn	22	ctrl V
etb	23	ctrl W
can	24	ctrl W
em	25	ctrl Y
sub	26	ctrl Z

esc	27
fs	28
gs	29
rs	30
us	31
del	127

Appendix C

Battery Option

Installation

Disassembly of the scale is required when installing the battery option kit.

1. Remove the pan and the pan support by removing the 3 screws marked "A" in Figure 1.
2. Remove the (2) Phillips head screws (marked "B" in Figure 2) and the rear panel.
3. Next remove the (4) Phillips head screws holding the rear power circuit board to the base casting.
4. Disconnect the rainbow cable and coiled cord. Remove the rear power circuit board.
5. Install the battery option circuit board and reconnect the rainbow cable and coiled cord. Make sure to loop the battery connector out through the battery door opening.
6. Replace the (4) Phillips head screws to hold down the battery option circuit board.
7. Exchange the rear panel with the panel cut to accomodate the ON/OFF switch. Mount the new rear panel onto the scale with the (2) Phillips head screws (marked "B" in Figure 2).
8. Remove the battery door, attach the battery connector to the battery, then insert the battery (cable end first) completely into the scale.
9. Replace the battery door, the pan and pan support.
10. The scale is now powered for portable operation.

Figure 1

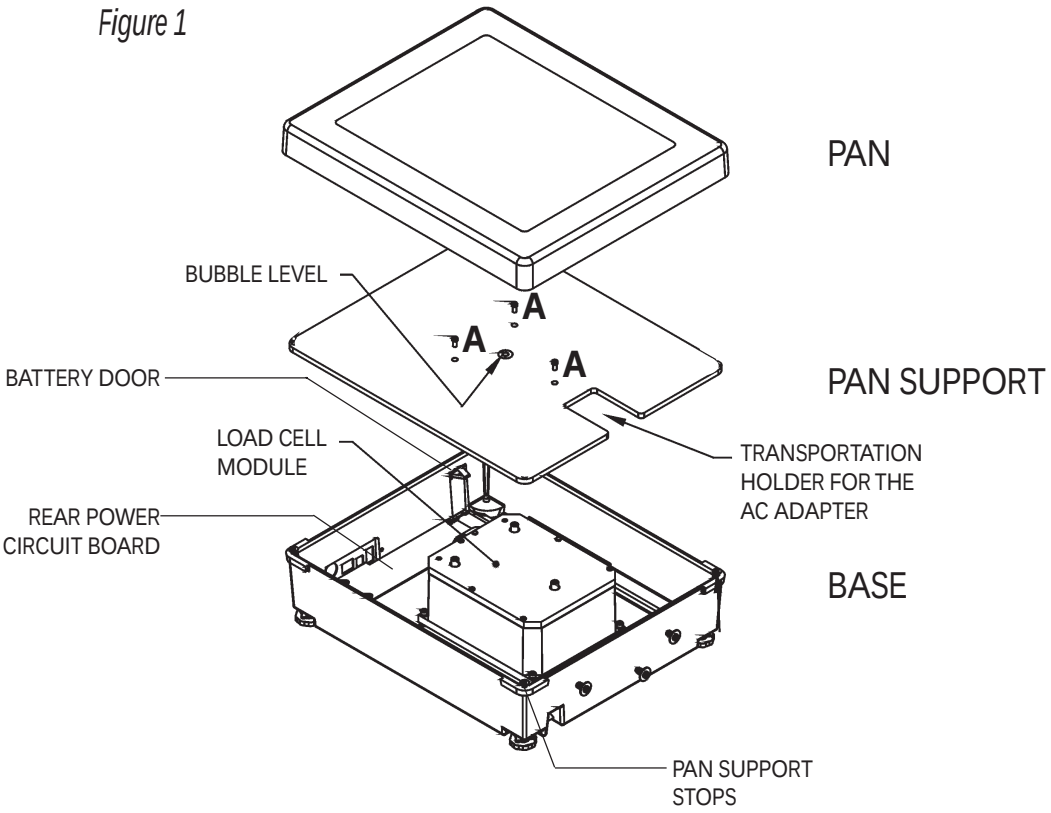
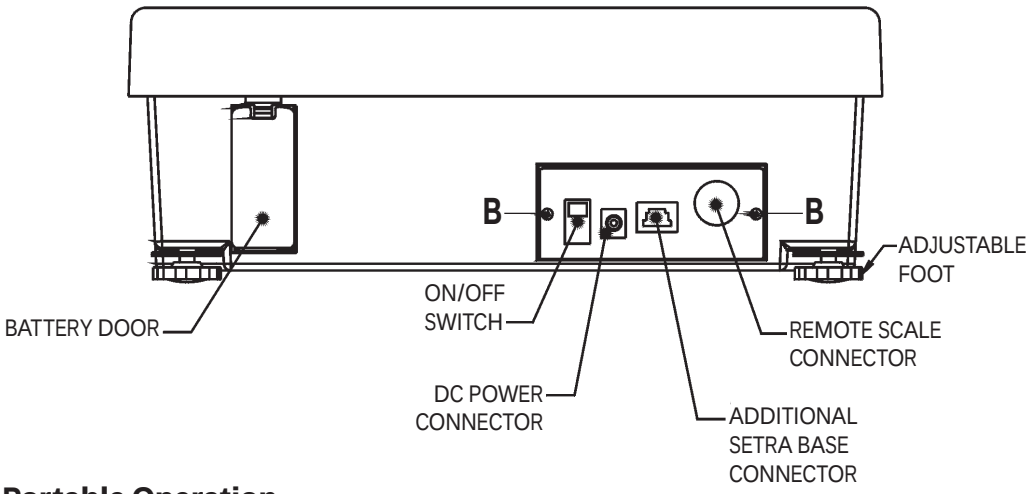


Figure 2



Battery Use for Portable Operation

A fully charged battery will allow the Setra Super II to operate for approximately 14 hours before recharging is needed. The battery will last two-thirds as long if the scale is equipped with either a backlight display, a remote Scale Option or bar code scanner. The "low battery" indicator light on the front panel of the scale will light up approximately 15 minutes before recharging is necessary. When battery power is too low for proper scale operation, the circuit will automatically shut off the battery and the scale will cease operation.

Replacement batteries can be ordered from Setra Systems (part number 409740).

Battery Charging

When the "low battery" indicator light on the front panel of the scale turns on, use the following procedure to recharge the battery:

1. Plug the AC adapter (Setra part number 404712) into an electrical outlet and plug the power cable into the scale. Do not remove the battery. The scale will automatically recharge the battery from the electrical outlet.

2. The "low battery" indicator light will remain on during recharge until the battery reaches 40% of its rated capacity. This will take about 2.5 hours with the scale power switch in the "ON" position, and two hours and ten minutes with the switch "OFF". A battery powering a scale alone will reach 95% of its rated capacity in 8 hours if the power switch is in the "ON" position and in 7 hours if the switch is "OFF". Note that the indicator light will not light up if the scale switch is "OFF".

3. If the scale is equipped to power a Remote Scale Option or a bar code scanner from the scale's battery, it is recommended that battery recharging be done with the scale power switch in the "OFF" position.

4. The charging indicator light on the front panel of the scale will stay on until the battery reaches 95% of its rated capacity. Note that the charging light will not be lit if the scale power switch is in the "OFF" position. Battery recharging time may vary slightly depending upon the temperature in the scale operating environment.

Battery Storage

When storing your scale for an extended period of time, it is recommended that you disconnect your battery completely from the recharging unit. Always recharge the battery before storage to prevent damage to the battery.

Appendix D

Strain Gauge Load Cell Remote Scale Option

Installation

Disassembly of the scale is required when installing the optional strain gauge load cell base analog to digital signal conversion PCB.

1. Remove the pan and the pan support by removing the 3 screws marked "A" in Figure 1.
2. Pop out the round connector plug from the hole marked "Remote Base" on the back cover.
3. Locate the two threaded holes in the left side of the bottom of the base casting (as viewed from the front of the base). Start a 6-32 x 3/8" screw into each of the holes and turn them two revolutions each.
4. Refer to Figure 2. Pick up the circuit board and bracket assembly and orient it so that the flange with two slots is downward and the 6-pin DIN connector faces the back. Lift the coil cord upward to the left and insert the bracket assembly into the base casting between the coil cord and the load cell assembly, so that the straight section of the cord is against the back edge of the bracket assembly above the DIN connector (circuit board face the load cell assembly).
5. Slide the circuit board back until the bottom of the bracket touches the back of the base casting and then slide the bracket to the left so that the flange slots slide around on the 6-32 x 3/8" screws. The coil cord should lie beween the bracket and the left side of the base casting.
6. Tighten down the 6-32 x 3/8" screws to hold the bracket in place.
7. Connect the Strain Gauge Remote Scale Option circuit board cable to the 10 pin header between the two RJ-45 jacks on the Rear Power Circuit Board.
8. Reinstall the pan and pan support with the 3 screws.
9. The scale is now ready for Remote Base calibration and operation.

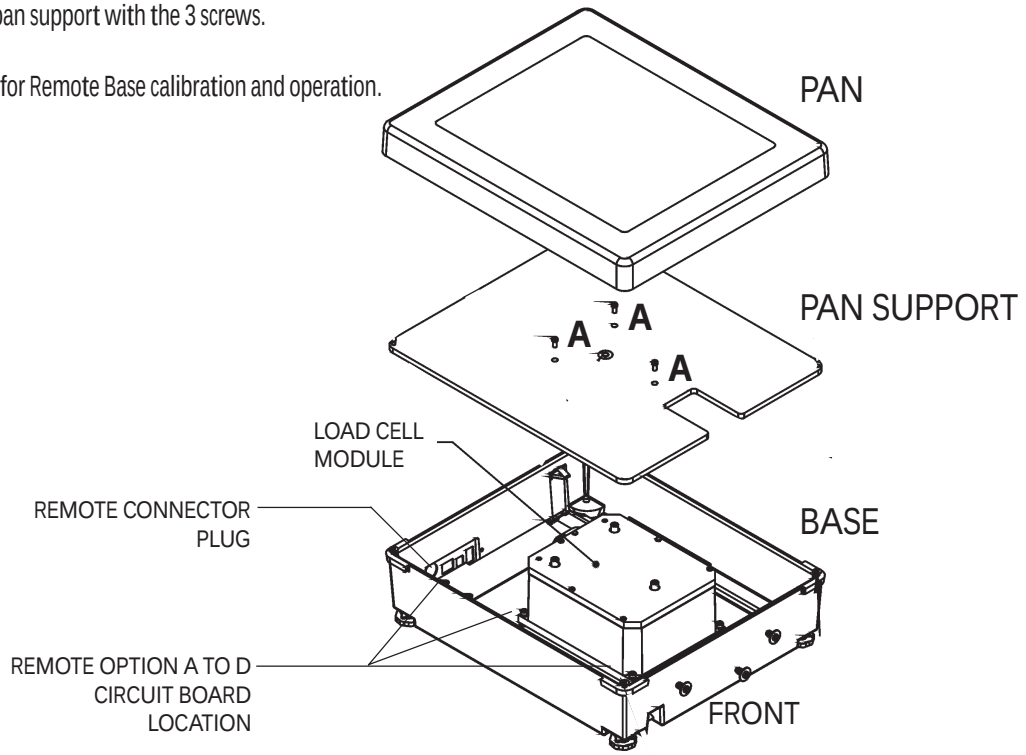


Figure 1. Exploded view of Super II before Remote Scale Option Installation

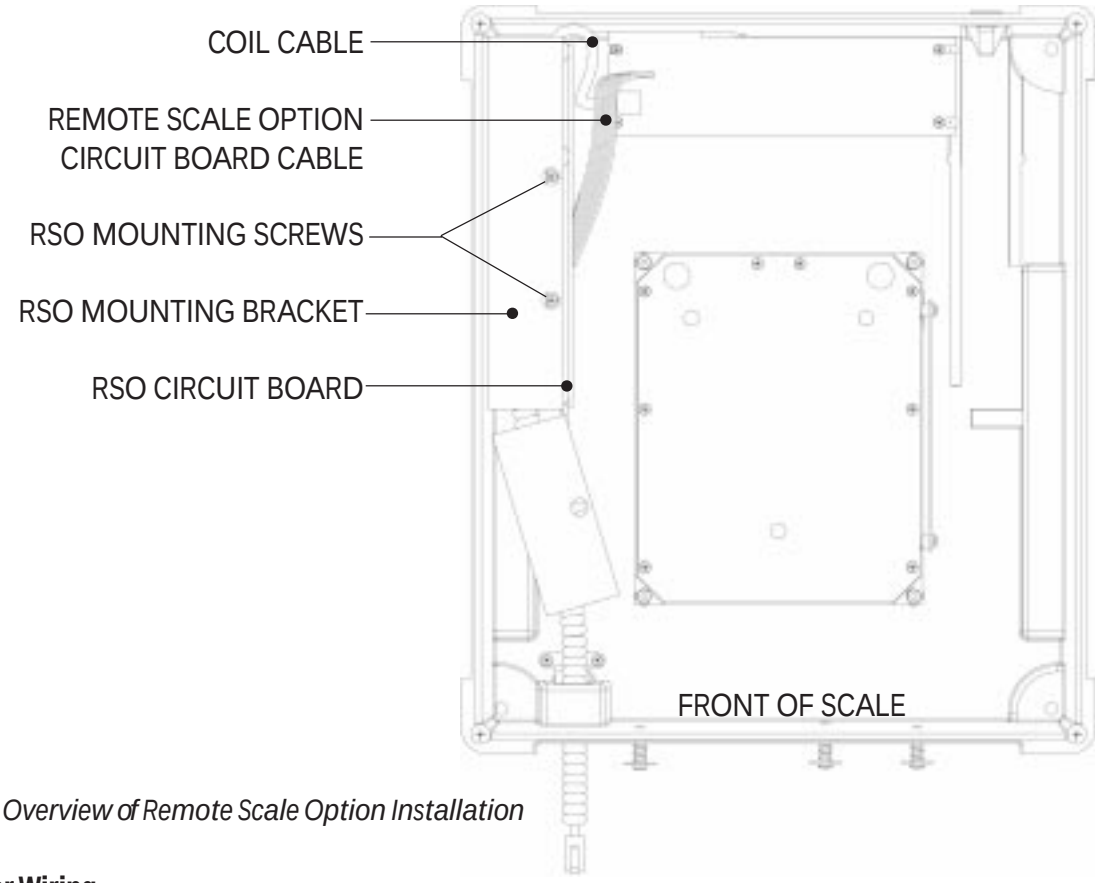


Figure 2. Overview of Remote Scale Option Installation

Connector Wiring

If the cable connector of the remote scale base is physically compatible with the 6 pin circular DIN connector on the back of the Super II scale, proceed to Figures 4 and 5 to verify that it is **electrically** compatible. Otherwise, damage may be caused to both the Super II scale and the remote scale base.

If the cable connector of the remote scale base is **not** compatible with the 6 pin circular DIN connector on the back of the Super II scale, follow the procedures directly below.

NOTE: DISCONNECT THE SUPER II SCALE AND REMOTE SCALE BASE FROM ITS POWER SOURCE BEFORE PERFORMING THE FOLLOWING PROCEDURES.

1. Remove the existing remote scale base connector.

2. Taking the connector supplied, separate the cord guard and metal housing by removing the screw.

3. Slide the metal housing onto the cable of the remote scale base. (See Figure 3.)

4. Strip 1/2" of the cable insulation.

   NOTE: Do not nick, scrape or cut foil or braided shield when stripping cable insulation. Be equally careful not to mar the wire insulation when stripping the shield or conductors when stripping the wire insulation.

5. Fold back the shield and strip 1/10" from each wire.

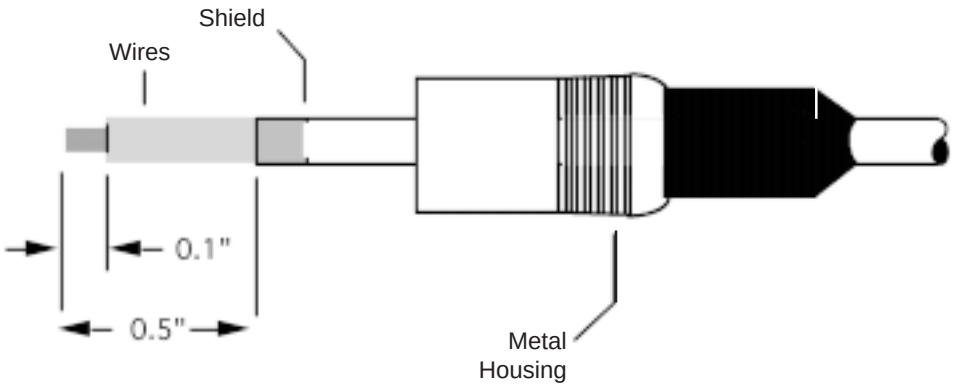


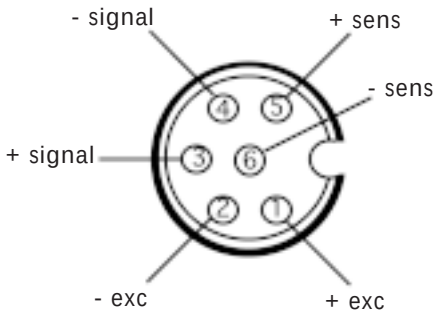
Figure 3. Cable Preparation

6. Following the wiring diagram in Figure 4, solder each wire to the pin contact.

7. Make sure all of the wires do not make contact with each other, then crimp the plug extension to the shield of the cable, solder to secure, if possible.

8. Slide the metal housing over the plug and secure with the screw using a small screwdriver.

Figure 4. View from solder end of shielded DIN plug connector .



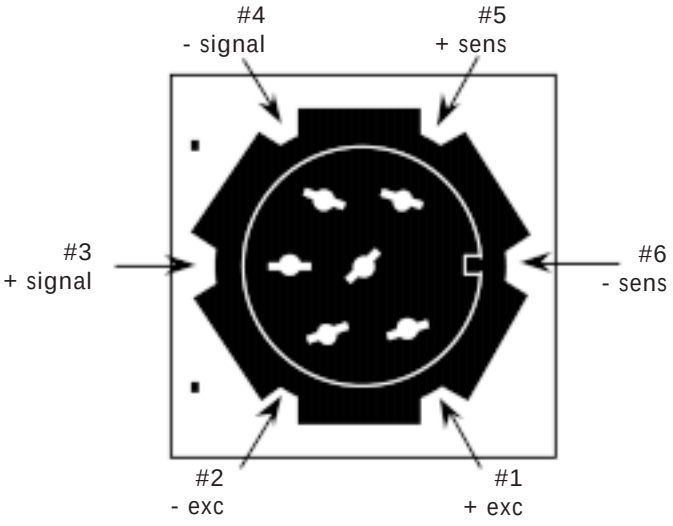
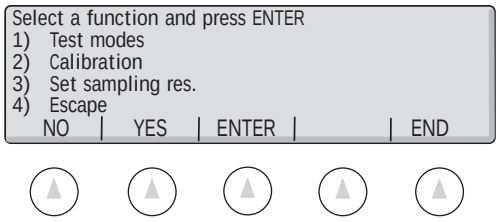


Figure 5. 6 Pin circular DIN Connector on back of Super II Scale

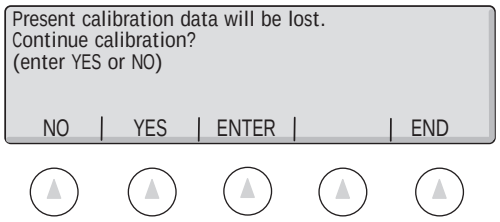
Calibration

The calibration of the Strain Gauge Load Cell Remote Scale Option is accessed through the **BASECOM** soft key of the CALIB menu in the Bases Setups (see CALIB section in this manual). Before entering the BASECOM selections, make sure that the controller is monitoring the Strain Gauge Load Cell Remote Base by entering the proper Base address number with the remote key.

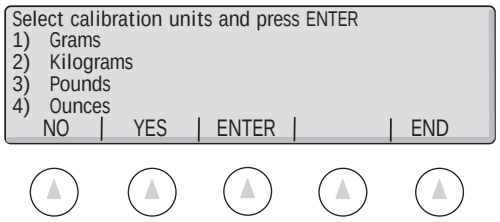
Upon entering the BASECOM mode, the following screen will appear:
(User input is shown in bold)



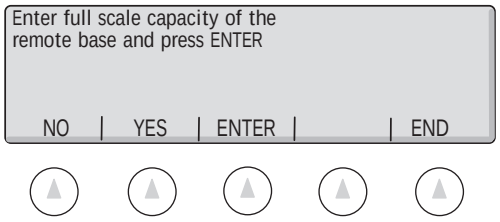
Press 2 and then press **ENTER**.



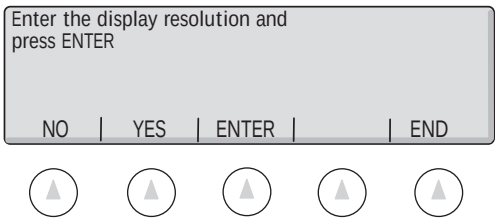
Press the **Yes** soft key.



Press the number for the desired units (**1-4**) followed by **ENTER**.

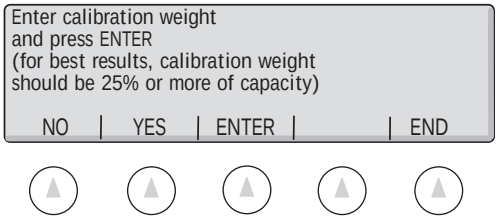


Using the numeric keys enter the value of the full scale capacity in the selected weight unit and press **ENTER**.

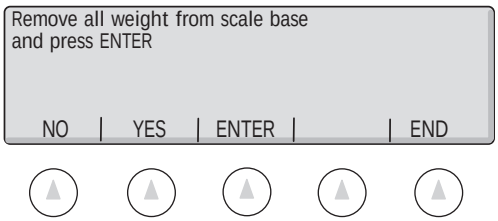


Enter the desired display resolution increment in the selected weight unit and press **ENTER**.

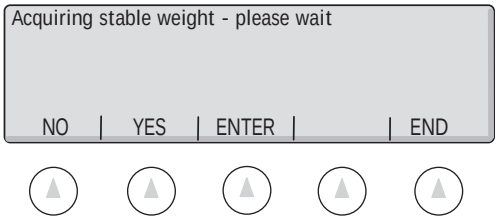
Note: The display resolution cannot be greater than 1/50,000 of full scale capacity.



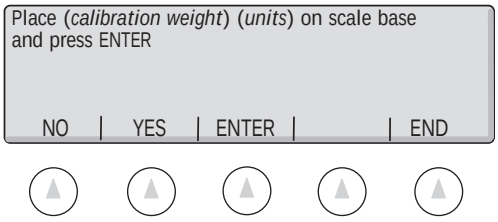
Enter the value of the calibration weight and press **ENTER**.



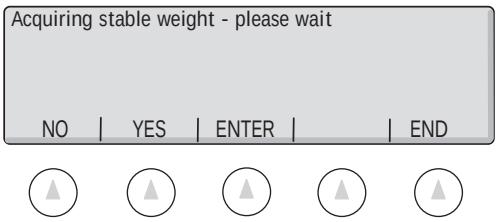
Remove all weight from the scale pan and press **ENTER**.



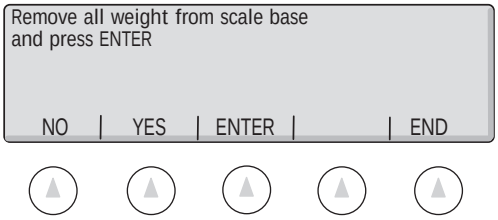
Wait while a stable reading is acquired.



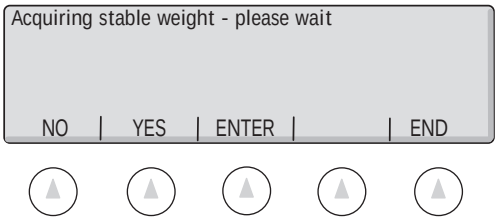
Place the previously entered calibration weight on the scale pan and press **ENTER**.



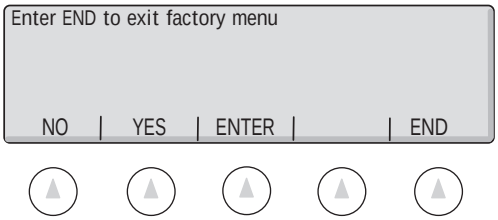
Wait while a stable weight reading is acquired.



Remove all weight from the scale pan and press **ENTER**.



Wait while a stable weight reading is acquired.



Press **END**.

Appendix E

SPECIFICATIONS

CAPACITY	READABILITY	REPRODUCIBILITY	NON-LINEARITY
27 lb	0.0005 lb	± 0.0005 lb	± 0.00005
35 lb	0.0005 lb	± 0.0005 lb	± 0.00005
55 lb	0.001 lb	± 0.001 lb	± 0.001 lb
65 lb	0.001 lb	± 0.001 lb	± 0.001 lb
110 lb	0.002 lb	± 0.002 lb	± 0.002 lb

CAPACITY	READABILITY	REPRODUCIBILITY	NON-LINEARITY
12,000 g	0.2 g	± 0.2 g	± 0.2 g
16,000 g	0.2 g	± 0.2 g	± 0.2 g
25,000 g	0.5 g	± 0.5 g	± 0.5 g
30,000 g	0.5 g	± 0.5 g	± 0.5 g
50,000 g	1.0 g	± 1.0 g	± 1.0 g

CONTROLLER

Display type:	Graphics LCD
Display units:	Grams, Ounces (avoir du poids), Pounds, Pennyweights (dwt), Troy ounces, Carats, Kilograms, Grains, User-definable units
Display resolution:	Selectable
Display update rate:	Selectable from 5 settings.
Internal resolution:	Selectable to 1 part in 1,000,000
Counting accuracy:	Selectable from 90% to 99.99%
Counting capacity:	9,999,999 pieces
Data entry:	Numeric keypad with alpha-register and changeable soft keys QWERTY keyboard connectivity
Printing:	10 programmable print registers
Database:	750 records for database and/or transaction log storage of up to 9 fields of information
Macro operation:	10 programmable macros for step by step prompting operations
Multiple base connectivity:	Up to 8 bases in any combination of Setra or strain gauge bases
Data communications:	3 RS232 ports: 1 IN port for bar code scanner* 1 OUT port for printer** 1 BI bidirectional port for computer device or PC
Selectable baud rates:	1200, 2400, 4800, 9600
Selectable parity:	8 NONE, 7 ODD, 7 EVEN
Dimensions:	$10^1/_2$" L x $4^1/_2$" W x $2^1/_2$" H (with rear foot installed) (27 cm L x 11 cm W x 6.5 cm H)

BASE

Construction:	Cast aluminum housing
Dimensions:	
(25 - 50 kg)	$12^1/_2$" W x $14^3/_4$" D x 4" H (with feet retracted) (31.5 cm x 37.5 cm x 10 cm)
(12 - 16 kg)	$11^1/_2$" W x $9^1/_4$" D x $4^3/_4$" H (with feet retracted) (29 cm x 24 cm x 10.5 cm)

* Setra barcode scanner options include the Smart Wand (p/n 403674) and the Linear Imager Gun for Scale (p/n 403678).

** Setra printer options include the Dyno SETRA 300(p/n 401160).

PAN

Construction: Stainless steel

Dimensions:
(25 - 50 kg) 13" W x 15 1/4" D x 1 1/2" H
(33 cm x 24 cm x 4 cm)

(12 - 16 kg) 11 1/2" W x 14" D x 1 1/2" H
(29 cm x 24 cm x 4 cm)

DIMENSIONS

Overall:
(25 - 50 kg) 13" W x 15 1/4" D x 4 1/2" H
(33 cm x 38.5 cm x 11.5 cm)

(12 - 16 kg) 11 1/2" W x 9 1/2" D x 4 3/4" H (with feet retracted)
(29 cm x 24 cm x 12 cm)

With controller attached:

(25 - 50 kg) 13" W x 19" D x 4 1/2" H
(33 cm x 48 cm x 11.5 cm)

(12 - 16 kg) 11 1/2" W x 9 1/2" D x 4 3/4" H (with feet retracted)
(29 cm x 35 cm x 12 cm)

GENERAL

Operating temperature: 40 º to 110 º F (5 º to 43 ºC)
10 - 90% RH non-condensing

Power requirements: 12 - 16V DC @ 800 mA
US AC adapter: 16 V DC @ 550m A
Optional 12 VDC@ 500m A EC fpr 230 VAC, 50 Hz

Shipping weight:
(25 - 50 kg) Base: 33 lbs (15 kg)
Controller: 3 lbs (1.5 kg)
Combination: 35.5 lbs (16 kg)

(12 - 16 kg) Base: 16.8 lbs (7.5 kg)
Controller: 3 lbs (1.5 kg)
Combination: 19.8 lbs (9 kg)

Appendix F

Glossary of Terms

Accuracy — The degree of conformity of a measured value to the true value.

APW Enhancement — A scale feature whereby the scale uses a preliminary average piece weight to count parts, allowing the operator to increase the sample size without hand counting. When the targeted sample size is obtained the average piece weight is recalculated for final counting with greater precision.

Average Piece Weight — The value calculated by dividing the quantity of parts in the sample into the weight of the sample. This value is stored in the scale and divided into the weight of the bulk load to provide a total count.

Base — The portion of the scale that receives the load to be weighed.

Baud Rate — The rate at which a scale transmits or receives information to or from a computer or peripheral device.

Controller — The portion of the scale that includes the keypad, display, battery status LED's and ports for communicating with the scale base and peripheral devices.

Counting Capacity — The largest number of pieces that can be shown on the controller's display.

Counting Resolution — (Also, "internal counting resolution" or "internal resolution")The ratio of a scale's capacity to the weight of the lightest part placed on a scale's weighing element which can be counted in increments of one part.

Displayed Resolution — The ratio of the weighing capacity of the scale to its readablility.

Display Hysteresis — The tendency of a scale, with a fluctuating reading, to stabilize on the most consistent value.

Dual Scale System — A counting system usually involving a low capacity local base for sampling and a high capacity remote base for weighing the bulk load.

Gross Weight — The weight of the contents (net weight) combined with the weight of its container (tare weight).

ID — Abbreviation for "identifier". An identifier can be a part number, lot number, or item description and can be entered into one of several available fields in the data base.

Kitting — The counting procedure that involves repeatedly counting out small quantities of a given part to be packaged with other parts that will be used together in an assembly.

Macro A series of preprogrammed scale functions that are initiated by a keypress, and by means of display prompts, will guide an operator through a weighing or counting operation.

Menu Refers to the numerous choices presented in the display as labels for the soft key. Also, the hard key that provides access to additional scale features.

Minimum Accuracy The setting expressed as a percentage that determines the smallest sample weight required to count uniform parts with an error that is no larger than that selected.

Net Weight The weight of the contents of a container, without the weight of the container.

Parity A bit used to check the validity of the data word.

Precision The degree to which a weight measurement deviates from the average of repeated measurements, usually expressed as one standard deviation (or one sigma).

QWERTY Term used to describe the typical keyboard found on a personal computer or type writer. QWERTY refers to the top row of letters on the keyboard.

Readability The smallest weight increment shown on a display.

Register A memory location within the scale where specific data is stored.

Remote Scale One or more additional Setra or strain gauge load cell bases, that are accessed by means of the "remote" key on the controller keypad.

Reproducibility See "PRECISION"

Resolution The smallest change in mechanical input which produces a detectable change in the output signal.

Set Points Target weight or count values that can be entered into the scale for filling or check weighing applications. Set Points can be used to indicate when a weight or count is within a specified range.

Span The calibration point which when combined with zero determines the slope of the line that tracks the measured weight values as a function of applied load.

Tare The weight of an empty container. Also, the process of storing the weight of an empty container and zeroing the scale's display.

Transaction Log A location in the scale's database where the results from each counting or weighing operation are stored in chronological order.

Unit of Measure One of several available measures of weight such as grams, kilograms, pounds or ounces.

Zero Tracking Automatic subtraction of small changes in weight readings due to temperature or other enviromental factors to maintain a displayed reading at zero over an extended period of time.

Appendix G

Setra Systems, Inc.
Limited Two-Year Scale Warranty

Setra Systems, Inc. warrants the scales it manufactures to be free from defects in material and workmanship. Upon return, transportation charges prepaid, to Setra's factory within two (2) years of the date of purchase, Setra will repair or replace, at its option, any scale which it determines to contain defective material or workmanship and will return said scale to purchaser, transportation prepaid, at any point in the United States. Setra shall not be obligated, however, to repair or replace scales which have been repaired by unauthorized parties, abused, improperly installed, altered, or otherwise misused or damaged, even if by accident, in any way. Setra will not be responsible for any dismantling, reassembly or reinstallation charge.

Nothing in this warranty shall be construed as a warranty for merchantability or fitness for any specific use or purpose, and this warranty is in lieu of all other warranties, express or implied. Setra shall not be held liable under the terms of this warranty for any special, indirect, incidental or consequential damages claimed in connection with the scale's performance or availability.

Setra Systems, Inc.
Weighing Systems Division
159 Swanson Road
Boxborough, MA 01719
(978) 263-1400
1 (800) 257-3872
Fax (978) 635-9551

.

WARNINGS

WARNING: IF THIS EQUIPMENT IS USED IN A MANNER NOT SPECIFIED BY THE MANUFACTURER, THE PROTECTION PROVIDED BY THE EQUIPMENT MAY BE IMPAIRED

USE SETRA REPLACEMENT BATTERY ONLY, PN 409740, LEAD-CALCIUM TYPE BATTERY.

POSSIBLE PINCH POINT. DO NOT PLACE FINGERS BETWEEN LOAD PLATE AND CHASSIS.

WARNING: DO NOT IMMERSE SCALE

WARNING: INDOOR USE ONLY

CLEANING : To clean the scale, use a damp cloth on the exterior of the scale. Do not clean with solvents.

FCC Warning

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when this equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area may cause harmful interference, in which case, the user must correct the interference.

Canadian Department of Communications

This digital apparatus does not exceed the Class A limits for radio noise emissions from a digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numerique n'emét pas de bruits radioeléctriques depassant les limités applicables aux appareils numeriques de la classe a préscrites dans le reglément sur le brouillage Radioeléctrique edicté par le Ministre des Communications du Canada.

EC Declaration of Conformity

The product manufacturer,

Setra Systems, Inc.
159 Swanson Road
Boxborough, Massachusetts 01719
U.S.A.

declares under its sole responsibility that the product,
Super II™ Electronic Weighing and Counting Scale
to which the declaration relates is in conformity with the following European harmonized and published standards as of the date of this declaration;

This Declaration of Conformity is in accord with European Standard EN 45014 *General Criteria for Supplier's Declaration of Conformity.* The basis for the criteria can be found in international documentation, particularly in ISO/IEC, Guide 22, 1982, *Information on Manufacturer's Declaration of Conformity concerning standards and other technical specifications.*

This declaration is an EC Type Declaration of Conformity as referenced in article 10.1 of EC directive 89/336/EEC *The EMC-directive* and as in Appendix III.B of EC directive 73/23/EEC *The Low Voltage Directive*

EN61326 (CISPR 11, Group 1, Class B) Electronic Equipment for Measurement, Control, and Laboratory Use EMC Requirements

EN55022/CISPR 16:1992 Radiated Emissions,
30 – 230 MHz, 30dBmV/m @ 10m
230-1000MHz, 37dBmV/m @ 10m

EN55022/CISPR 16:1992 Conducted Emissions,
150kHz - 0.5MHz 66-56dB(mV) QP, 56-46dB(mV) AV
0.5MHz – 5MHz 60dB(mV) QP, 50dB(mV) AV
5MHz – 30MHz 56dB(mV) QP, 46dB(mV) AV

EN61000-3-2:1995 Harmonized Emissions

EN61000-3-3:1995 Flicker Emissions

EN61000-4-2:1995 Electrostatic Discharge 4kV contact and 8kV Air Discharge Performance Criteria B

EN61000-4-3:1996 Electromagnetic Field Immunity, 3V, 80% AM Modulated at 1kHz, Performance Criteria A

EN61000-4-5:1995 Surges on AC Power Mains, 0.5kV Differential, 1kV Common Mode, Performance Criteria B

EN61000-4-6:1996 Conducted RF Current Injection on AC Power Mains, 3Vrms, Performance Criteria A

EN61000-4-11:1994 Voltage Dips and Interuptions on AC Power Mains, 0.5 Cycle Each Polarity, 100%

EN61010-1:1993 Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use

These conclusions are based on test report:
EN61326: 1998 TEST Report for Setra Systems on the Super II Scale with Backlighting Model(s)409
and
EN61326 (CISPR 11, Group 1, Class B) Emissions Testing Performed on the Setra Systems Weighing Scale, Model 409, Super II with Backlighting Option

Technical Information File is maintained at:
Setra Systems, Inc.
159 Swanson Road
Boxborough, Massachusetts 01719
U.S.A.
Tel: (978) 263-1400
Fax: (978) 635-9551

Year of CE Marking: 2001

I do hereby declare that the product specified above conforms to the listed directives and standards.

James J. Vecchio

James J. Vecchio
Vice President
Weighing Systems Division
Setra Systems, Inc.

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